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THE PRINCIPLE OF ADEQUATE RATES IS AGAIN MAINTAINED

The right of a public service company to earn a fair—not to say liberal—return on its investment has been upheld so often that it has come to be regarded as a self-evident truth. In fact, in modern business it is considered as one of the "inalienable rights"—those American heritages referred to in the Declaration of Independence.

The recent decision of the United States statutory court in New York in the Interborough Rapid Transit fare case has added another bulwark to the judicial structure that protects a utility from rates so low as to be confiscatory. The application of this decision is much broader than the mere rate of fare involved, as it concerns the vital question of what a corporation serving the public may earn on its capital. Within the last ten years this same question has been raised repeatedly, and has been answered by the highest courts of the land passing upon the cases in favor of the service companies.

These cases have established the viewpoint of both public and rate-making bodies that charges for service in transporting passengers over traction lines, in supplying gas, electric light and power and the providing of telephone and telegraph service should be adequate to compensate liberally the men and money that are carrying on these enterprises.

Recognition of this right is what has raised the public service industry to the high position it occupies today in the estimation of investors. That is why telephone securities, for instance, have steadily grown in favor among discriminating investment houses that demand a fair return and with safety.

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In the New York case, the federal statutory court stated that the 5-cent fare on the Interborough lines, providing earnings of only about 2½ per cent last year, "amounts to continuous confiscation." In the proceedings of the Consolidated Gas Co. of New York to obtain relief from its 80-cent gas rate, the United States Supreme Court held this rate was confiscatory.

In the famous decision in the case of the Southwestern Bell Telephone Co., the United States Supreme Court indicated that a public utility corporation had the right to earn 8 per cent on its capital and to make charges that would produce such earnings. Other decisions in which this principle was applied were those of the Indianapolis Water Co. and the Minnesota rate cases.

It is generally agreed that the revival of the public utility industry of the country began and was inspired by the United States Supreme Court decision in the Southwestern Bell Company case. The recent opinion of the United State statutory court in the Interborough fare case is expected to be sustained eventually by the United States Supreme Court on the record of this body for supporting numerous petitions against property confiscation and against inadequate returns on capital investments of service companies.

The prospect indicates a continuation of favorable conditions in the public service investment field. Support from the courts will strengthen the rate and the security features of the industry. The unprecedented rise last week in utility stock is ascribed to this prevailing opinion.

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With this situation established, service companies not receiving adequate rates are woefully negligent that delay in obtaining sufficient compensation. Without doubt there are many telephone companies still in this class. By dint of hard work and the shrewdest sort of management, they have been able to "get by" and render reasonably satisfactory service on rates that are too low. However, it is a wrong policy, and a run of good luck—coupled with air-tight management—is all that prevents such companies from disaster.

A devastating storm, wrecking lines and necessitating extensive replacements, would wipe out the too narrow operating margin and in a twinkling of an eye reveal the ruinous mistake of running the business on inadequate rates.

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The smaller companies are usually the telephone properties which have failed to obtain their just dues in the way of rates, generally because their managers are too busy on the every-day job to attend to the equally important task of getting adequate revenues. In such cases, also, the depreciа-

tion reserves are neglected because the existing low rates do not permit the withdrawal of funds from the operating budget. And it is such a company that suffers most when that dreaded sleet storm finally comes.

Rates should be adequate to provide liberal compensation to the workers, set up proper depreciation and maintenance reserves and allow a reasonable return on the capital invested. The commissions, the courts and the public recognize and acknowledge these to be necessary conditions, and the company that fails to demand such rates is doing itself rank injustice, and, in the long run, also the public it serves.

* * * *

The telephone rate question at present is agitating the public mind only in a few localities where the Bell rates are being opposed. However, it is likely to figure more prominently a few years from now when the securities of some of the instances of recent telephone financing begin to mature. It will require higher rates to provide the revenue to meet the interest on the too liberal capitalization which has been put in telephone consolidations formed in some territories.

At least, that is the sober opinion of experienced telephone men who believe too high prices have been paid in certain cases. They fear that existing rates will prove too low to meet interest and sinking funds charges on combinations of properties where appraisals were high, and that either the rates must be materially advanced or there will be defaults. This theory is based on past experiences. Business conditions, however, have undergone remarkable changes in the past few years, and things are happening today that would have been considered impossible five years ago. "The old order changeth" is the accepted belief of observers who have watched industrial records broken again and again, and the forecasters have become accustomed to seeing their predictions passed and exceeded many fold.

Still, it pays to "play safe," especially when the whims of the public have to be considered in the regulating of rates of public service companies.

COMING CONVENTIONS.

Pennsylvania State Telephone & Traffic Association, Harrisburg, Penn-Harris Hotel, May 15, 16 and 17.

Up-State Telephone Association of New York, Powers Hotel, Rochester, May 23, 24 and 25.

Tri-State Telephone Convention, Erie, Pa., August 8, 9 and 10.

Illinois utilities confront another flurry of "home rule" legislation. Governor Small—who received the biggest political licking the state ever saw at the April primary—has called the legislature to meet in special session May 15 to pass laws to give Chicago control of its street car system.

Exactly what this means to the state commission, which also controls the telephone, gas and electric companies, remains to be seen, but it is expected some radical changes will be made in state utility regulation.

* * * *

Chicago politicians are framing a program to remove all the public service companies from state regulation and place them either under the city council or a new commission local in character. The situation indicates that these companies will have to be on guard to protect their interests.

Chicago street car conditions are distressful and call for remedial action, but that should not involve all the other utilities in the complications that are likely to go with the political bunk usually attached to "home rule" campaigns.

Nine times out of ten state regulation of utility service serves the public better than any scheme of local political control.

Plant Management in Small Offices

Operating Man of Telephone Organization and His Qualifications—Selecting of Personnel and Keeping Up Its Efficiency—Equipment and Maintenance Programs—Third Award Paper, Plant Division TELEPHONY's Prize Contest

By E. M. Hanson,

Equipment Engineering Department, Illinois Bell Telephone Co., Chicago

The telephone business is a large field and, as a result, requires men and women of various vocations. Often times the mistake is made of placing a good commercial man in the maintenance division, or a good maintenance man in the traffic department, or vice-versa, etc.

As a rule, after a telephone company is organized, financed and all ready for operation, then it is safe to assume—at least for this article we will so assume—that the heads of the company, the directors, are qualified for the part that they are to play in the business.

This board of directors will then have to perform an official duty that requires a thorough investigation, because here is where some companies make or break—and that is, selecting an operating manager, superintendent, or whatever title he may be given.

This man should be broad. He should have a sprinkling knowledge of every phase of the telephone art and, in addition, be an executive who can pick the right man for the job; also be able to deal intelligently and sympathetically with the public. The good will and cooperation of the subscriber is 50 per cent of the battle, with the other 50 per cent consisting of good, sound business judgment, seasoned with economy in furnishing the best of telephone service.

It would be well for any company, large or small, to pay a higher salary for such an operating executive and realize a profit on its investment, than to get a second-rater at a small salary who would eventually and inevitably run the business at a loss.

When this man has been selected, the duty then falls on him to pick his assistants and the actual "doers" of the various jobs. In selecting and hiring these various employes, too much stress cannot be laid on character. That, in my estimation, is of vital importance.

Some may say: "He is only a lineman," or "She is only a clerk."

To such statements, I would answer: "Yes, probably so, but don't forget that these same employes form the 'direct contact' with the public." The very nature of their work takes them into the subscriber's sanctuary, his home, into the very reason for the existence of any town or city, its stores, offices, and manufacturing plants, etc.

If these employes are discourteous, morally unclean, or slouchy and unkempt, the reaction to the company will be one of antagonism. The dividend will be greater from hiring a man or woman who is morally clean, of congenial personality,

and willing to cooperate—even though he or she does not know the business and it is necessary to spend a little money in training them—than it will if a man or woman is hired who is an expert in his or her line of work, but lacks character.

The personnel question, however, does not end with the hiring. It is of vital importance throughout the existence of the company that safety first instructions be given. When possible, first aid courses should be arranged, get-together "pep"

"Economy and Success Go Hand in Hand," Says Mr. Hansom. "Do Not, However, Attempt to Economize by Buying Cheap Equipment."

meetings should be held and, in general, the morale of the entire organization should be kept at the highest point possible.

Every chance should be given the individual to better himself. Don't be too hasty in going outside of your own organization for supervisors and executives. Every time an outsider is brought in for an executive or a supervisory position, a feeling of resentment passes through the organization and will eventualy reflect back on the service to the subscriber.

Another question that is ever before us is the question of equipment. What type? etc.

The type is best determined after an engineer has made a study of the particular area to be served. The price, however, should be controlled entirely by quality. Don't overlook the great and ever-present factor of maintenance. To use an everyday expression, "It's not the original cost but the upkeep that is most expensive."

Also, great care should be taken to maintain a standard. It is cheaper to buy standard equipment than special equipment. It is also cheaper to replace a worn part with a new piece of apparatus of the same make than one of a different make. A foreign piece of apparatus injected into a standard circuit or subscriber's set, etc., may have a tendency to decrease transmission, supervision or service in general.

The outside plant is another very important part of the exchange. Open-wire circuits should be well-constructed in order to maintain good transmission. Do not attempt to economize on open-wire construction; it's too expensive. The place to economize on outside plant is in cable distribution.

A good, sound cable construction program based on an up-to-date conservative commercial estimate is an investment that will pay large dividends. This estimate should, if possible, be made by an experienced commercial engineer, or by someone who is familiar with, or capable of, estimating future growth in the various sections of the exchange area.

The outside plant should also be well maintained, to insure the best possible transmission. Don't wait until "sometime when I'm not so busy" to repair cases of trouble that are "repeaters" or that "show up" only when it rains, if you want to keep the good will of the subscribers affected.

Next we come into the maintenance department—what should we expect to find here? In my opinion we ought to find, first of all, "system." There is a lot of lost time and "haywire" repairing due to lack of systematic methods in handling trouble and repairs.

Distribute your trouble-shooters throughout the various districts in such a way that each man can clear the maximum number of troubles with the minimum amount of time consumed in travel. As new complaints come in, sort the tickets and arrange them according to the various districts, at once, so that when the troubleman calls in for an O. K., you can tell at a glance whether or not there are any more cases of trouble in his district, and not have to look through a whole stack of tickets trying to segregate the complaints in a certain district while he is waiting on the line.

I believe also that it is profitable to make periodical tours of inspection. Take a bunch of the old trouble tickets with the repairman's report of what he found and did to clear the trouble, and go out in the districts to see what kind of work your men are doing. In this way, a careless or inexperienced repairman can be spotted before very much damage has been done. One way of keeping a step ahead of complaints from subscribers is to be on the lookout for, and eliminating causes of, trouble before the trouble occurs.

As the telephone art, in general, advances with new developments, etc., so do the ways and means of outside plant maintenance. One of these improvements is the method of transportation for the repairman. Years ago we used to walk or use a horse and buggy. Then came the bicycle, and now we have the automobile.

With the introduction of the automobile, we injected something into the system which, if not properly watched, will bore a hole into the financial structure of a company, through which the profits will disappear. It is very important that a close check be kept on repair bills, new tires, new radiators, etc., to see if the expense is due to carelessness, or is really justified.

Make a check once in a while to see how many rim-cut tires you have, how many frozen radiators, broken axles or stripped gears. I have seen repairmen who could drive a Ford car four or five years without hardly any trouble, and then I have also seen the type which can wreck a Ford in a year.

Finally, let us remember that economy and success go hand-in-hand. Do not, however, attempt to economize by buying cheap equipment. Let me repeat the everyday expression: "It's not the original cost but the upkeep that is most expensive."

Plant Management in Small Offices

With the combining of small exchange properties, the importance of plant management is more than ever before the industry. New organizations are being formulated, and their success will be reflected in the service, public relations and the companies' financial statements.

In his article on "Plant Management in Small Offices," Mr. Hanson embodies the experience and observation of some ten years' practical work. For two years he was employed as assistant wire chief by the Northern States Power Co. at Minot, N. D. In 1919, he was with the United States Signal Corps assigned to construction, maintenance and installation at St. Nazaire, France.

The next two years he was wire chief for the New Ulm Rural Telephone Co. at New Ulm, Minn. The next four years were spent with the Western Electric Co. as equipment engineer, and in 1927, he became an equipment engineer with the Illinois Bell Telephone Co. in Chicago.

Mr. Hanson, in his article, writes from the point of view both of the operating man and engineer. His ideas are, therefore, well worth consideration of the telephone executive.

Gary Interests Acquire Substantial Holdings in Continental.

Officers of Continental Telephone Co. have announced that, by arrangement with the management of the company, the Gary interests have acquired substantial holdings in the company and will, effective at once, be active in the management of the business.

The Continental Telephone Co. has grown to such extent, its officers state, that the management of its properties distant from its present headquarter offices in St. Paul, Minn., and Lincoln, Neb., have made it necessary either to establish other offices and managerial staff in other cities or to make available for the business the facilities of a managerial organization already established.

The Gary interests have a large staff for the supervision and management of operating properties, so located that it is especially available to the Continental properties, and the Gary staff located in Kansas City, Mo., and other cities will immediately undertake the supervision of a number of the Continental operating properties, especially those in the South.

"We consider it beneficial to the Independent industry as a whole," stated officers of the Continental company, "that these two well-known telephone organizations be allied in this manner. Both are known to be sound and careful operators of Independent properties. The arrangement will, we think, be greatly to the benefit of all the operating companies involved, and assures Continental of conservative and capable management of the properties."

The Continental Telephone Co. will be continued as a separate corporation, it is stated, and no changes are contemplated in the personnel of the operating companies. J. G. Crane, V. E. Chaney E. C. Blomeyer and G. B. Foscue, Jr., of the Gary organization have been elected directors. The remaining directors are Frank H. Woods and J. H. Agee of Lincoln, Neb., and C. B. Randall, George K. Gann and A. C. Cragg of St. Paul, Minn.

The announcement was confirmed by E. C. Blomeyer, vice-president of Theodore Gary & Co. "We are much pleased to be associated in this way with men so prominent and favorably known in the Independent field as the Continental organization," said Mr. Blomeyer, "and we shall, along with them, do our best to efficiently continue the management of the operating companies involved."

The Continental Telephone Co. operates some 130 exchanges in seven states. The properties include some of the most successful Independent companies in Nebraska, Iowa, Kentucky, Tennessee, and also several other Southern states. With such experienced telephone people in charge, it is naturally a practical certainty that the business will continue to be successful and prosperous and a credit to the Independent group.

New Short Wave Transatlantic Planned for Near Future.

The American Telephone & Telegraph Co. announced recently that an additional transatlantic telephone circuit will be provided to supplement the present service.

To carry out the plan a tract of land comprising about 450 acres has been assembled by purchase and lease in the northwestern part of the state of New Jersey. On this site, a short-wave receiving station will be established in the near future, which, together with the company's sending station at Deal Beach, N. J., and similar installation in Great Britain, will provide an additional circuit for transatlantic calls.

Sufficient property has been obtained to provide for future expansion. The tract is located on the Schooley Mountain range, at an elevation of about 1,150 feet, about a mile northeast of Flanders and three miles from Netcong. The location of the short-wave receiving station was determined after extensive tests to ascertain the conditions necessary for good reception and freedom from interference. Construction will be started soon. Wire-line connection to New York will be made by using a section of the New York-Chicago telephone cable via Morristown, N. J.

The company said the expansion of facilities was made necessary by the sharp acceleration in the growth of transoceanic telephone business following recent rate reductions.

Interesting Program for Pennsylvania State Convention.

The annual convention of the Pennsylvania State Telephone & Traffic Association is to be held at the Penn-Harris Hotel on May 15, 16, and 17, Harrisburg. The program for the first day includes several addresses of particular interest, including a talk on radio program service and order No. 14,700 of the Interstate Commerce Commission.

On the morning of the second day a special accounting conference will be held, at which A. L. Geiger, attorney of the United States Independent Telephone Association, Washington, D. C., will preside and discuss further the depreciation order of the Interstate Commission.

Wednesday afternoon Sergius P. Grace, general commercial engineer of the Bell Telephone Laboratories, will give a demonstration and explanation of all the latest inventions in the telephone and radio field and will tell what is being done at the Laboratories to improve the art of telephony.

The sessions of the operators' conference, under the leadership of Miss Rosalia Shiber, chief of toll traffic, Johnstown Telephone Co., assisted by Miss Edna Bateman, chief toll operator, Cumberland Valley Telephone Co., will be held on Tuesday, May 15, at 2 p. m., Wednesday at 9 a.m. and Thursday at 9 a. m.

The program in full follows:

TUESDAY, MAY 15, 2 P. M.

"Looking Backward and Forward," by H. E. Bradley, president, Pennsylvania State Telephone & Traffic Association, Harrisburg.

"The National Situation," by F. B. MacKinnon, president, United States Independent Telephone Association, Chicago, Ill.

"Leasing Telephone Plant for Radio Program Service," by George B. Quatman, treasurer-manager, Ohio Telephone Service Co., Sidney, Ohio.

"Order No. 14,700 of the Interstate Commerce Commission," by Alfred L. Geiger, attorney, United States Independent Telephone Association, Washington, D. C.

General discussion.

TUESDAY EVENING.

Theater party.

WEDNESDAY, MAY 16, 10 A. M.

Special accounting conference.

Further discussion of Interstate Commerce Commission order No. 14,700. A. L. Geiger, presiding.

WEDNESDAY, 2 P. M.

"Science and Research in Telephone Development," by Sergius P. Grace, general commercial engineer, Bell Telephone Laboratories, New York City.

WEDNESDAY, MAY 16, 7 P. M.

Banquet and dance—with an additional surprise or two by Mr. Grace.

THURSDAY, MAY 17, 10 A. M.

"Plant Valuation for Rate-Making Purposes," by Harry Baldwin, appraisal engineer, Milwaukee, Wis.

"How We Think It Should Be Done"—a discussion of novel methods of handling different phases of telephone work, by men with original ideas.

Reports.

General discussion.

Adjournment.

Nebraska Association Commences Series of District Conferences.

Secretary George M. Kloidy of the Nebraska Telephone Association is arranging another series of summer conferences in various parts of the state, to which telephone companies in the neighborhood are to be invited to send representatives.

The first one will be held at Pierce, in the northeastern section of the state on Tuesday, May 15. The association will be hosts at lunch. No definite program will be attempted, but instead the meeting will take the form of a round-table discussion of various phases of telephone work.

Mr. Kloidy will take with him a representative of the state railway commission who will answer all accounting questions and explain any knotty points in the commission form of accounting. Telephone men capable of discussing transmission, commercial and plant problems will also be present.

The transmission engineers will have with them equipment with which to give actual demonstrations in circuit testing and show how to eliminate poor service conditions. Motion pictures of the industry will also be shown. As the larger companies hold conferences on traffic problems, this feature will be omitted from the program, but the secretary is seeking to have a representation from all departments.

Improvements In Traffic Records

Definite Information Now Kept in Records of All Departments of Telephone Business—Speed of Service Reports Designed to Reduce Time on Toll Calls—Paper Presented at The Traffic Conference of Texas Association Convention

By Miss Agnes Mandoiza,

Toll Traffic Supervisor, Texas Long Distance Tel. Co., Waco, Texas

Practically all guess-work has been eliminated from the telephone business. Under proper management, accurate records are kept and studies made, which render it unnecessary any longer for the owners to guess at what is going on in the business, or what is likely to happen in the future; there is always definite information from which they can reach their decisions on any matter that comes up.

The accounting department of the telephone company is probably more advanced than any in establishing accurate records; and this is natural, as the accounting department handles the finances of the company. The commercial and plant departments, nowadays, have their records carefully systematized, so they always know what it costs to furnish service, maintain lines and make new extensions. The traffic department also has become thoroughly systematized, and it is the object of this paper to tell of some of the records kept to determine the class of service being furnished on long distance lines.

In furnishing long distance service, we are vitally interested in the speed of service, or the time required to complete a call after it is received from the subscriber. To find out what kind of service is being rendered, a report of the speed of service is prepared each month covering operations of two days' time.

These reports are made from data taken from the toll tickets, and among other items show the average time required from the filing time of the call until it is completed, or until the subscriber is given a definite report. This interval has been named by some companies the "F S R" interval. Naturally, it is our desire in furnishing toll service to have this interval of time as small as possible. We are inclined to judge the quality of toll service rendered in different offices by this average interval.

The report of speed-of-service also shows the per cent of calls completed or on which a definite report is given within 10 minutes and within 20 minutes, also per cent of calls delayed by *N C*. In order to determine whether or not satisfactory service is being furnished, it is necessary to have certain standards to go by or some basis of comparison.

Our company has set as its objective an average speed of service of three minutes. Our average for January was 3.4 minutes, ranging from 1.6 minutes in some offices to as high as seven minutes in other offices. Naturally, we do not consider seven-minute service satisfactory, so we do what is necessary to improve it.

We have also set as our objective for per cent of calls completed in 10 minutes, 95 per cent, and of calls completed in 20 minutes, 99 per cent. During January our

"We Must Anticipate the Demand for Telephone Service," Says Miss Mandoiza, "and Be Ready to Furnish It When the Time Comes."

average for the system within 10 minutes was 95.4 per cent, and within 20 minutes, 99.1 per cent.

This speed-of-service report also shows the per cent of calls delayed by *N C*, which is valuable information to have where there are many delays. When an office has a high percentage of calls delayed by *N C*, a special study can be made by circuit groups to determine just where the *N C* conditions occur.

We have found that the inauguration of the combined line and recording methods speeds up the service materially, as all offices using this method of operating show a lower interval than those in which it is not used.

In addition to the speed-of-service report that is made covering all offices, we have toll service observers who are listening on the toll lines constantly, and making note of any operating errors. The forms used in making these observations list a number of items that make up the most common operating errors.

When an error is noted by the observer, she makes a notation of the item, offices, and details of the call in order to identify the ticket. When a high percentage of errors is noticed as coming from any one office, the chief operator of that office is furnished a copy of the report so she can take up with the operators handling the calls involved in those particular items.

Some of the items watched for in making these observations are such as:

Failure to take up subscriber's line before working on call.

Operators off line when called station answers.

Improper disconnect.

Failure to supervise promptly on completion of call.

Failure to leave call orders.

Failure to clear circuits.

Slow answers to inward signals, etc.

Naturally, in any number of operations in handling long distance connections there will be a certain percentage of errors. The fewest number of errors, or the smallest percentage, can be secured only by the best training and interest in their work by the operators involved.

In making these observations it is necessary to have certain standards determine when the service is satifactory and when it is not. To illustrate: We have set as one objective that the per cent of answers to inward signals requiring over 10 seconds should not exceed 5 per cent. Any percentage over this is not satisfactory.

This checking up on the operators to see what kind of service is being rendered is not done with the idea of criticizing and finding fault, but is a part of the training of operators to secure uniform, satisfactory service for the public; and we have found that the operators usually—in fact, almost invariably—appreciate this assistance in becoming more highly efficient.

Another important traffic record is the peg count. A highly-trained and experienced operating force can give more satisfactory service than a poorly-trained or inexperienced force. But suppose the highly-trained force is over-loaded—then the service suffers. Under such conditions the service might be no better than it would be in an office where the force was poorly trained.

The principal value of the peg count is to determine the proper loads for each operating position, so force adjustments can be made to carry a uniform load. Now, we all know the telephone business is

growing rapidly, so force adjustments usually mean adding operators to take care of the increased load. The peg count shows when this adjustment is necessary.

In making toll peg counts, we assume that an operator can do just so much work in an hour, and any excess work will result in slow service to someone. Since there are a great many different items of work done by a toll operator, we have been compelled to set up certain standards by assigning a certain number of units of work to each operation.

For instance, we assume that handling an outward person-to-person call on a direct circuit requires 11 units of work. If it is on a one-switch circuit, it requires 14.4 units of work; two or more switches, 17.7 units of work. An outward station-to-station call on a direct circuit requires 6.55 units of work, and so on. These figures do not include recording, which is considered as requiring 4.5 units of work for each ticket recorded.

When certain units of work are assigned to each operation that is to be performed by an operator and a peg count is made by hours on the tickets or calls handled by each operator, it is easy to determine the amount of work being done by each operator or the total units per hour per position. Then the question comes up as to how many units of work can be handled by an operator and furnish satisfactory service. This depends principally on their training and experience, and no schedule should be set up without taking these items into consideration.

In making operating schedules it is just as important that the operating force carry a normal load as it is that they do not become overloaded. Extremely light loads usually result in the operator's attention being distracted to something besides the job in hand, and results in slow service.

There is also a daily toll traffic record, a monthly report, that is posted by the chief operator each day, showing the number of calls offered and completed, the per cent completed and the number of cancelled calls bearing report changes. Some offices also post on this record the accumulative per cent completed for the month.

The per cent completed is a very important item in the supervision of toll operating. Usually we consider any per cent completed below 90 as being unsatisfactory, but we find that the per cent completed is always higher in the small offices than in the larger cities.

There are also periodic studies made of circuit earnings and circuit loads. Twice each year the toll reports showing the number of calls and the amount in dollars from each office to all other stations are gone over, and a report made showing the number of calls passing over each circuit or group of circuits during the month.

We consider that with proper operating under the present improved methods one circuit should handle approximately 50 calls per day, so this report shows fairly accurately whether or not our circuits are loaded to capacity.

There is also a report made up dividing the total toll revenue among the circuits over which the calls passed according to the mileage of the circuit. This gives the earnings per circuit and is further subdivided to show the earnings per circuit mile. This report shows whether or not the operation of any circuit or group of circuits is profitable.

And now, the final picture. What is the object of all these records? To keep the long distance service up to the highest point of efficiency. Years ago, the placing of a long distance call was somewhat of a ceremony, to be approached by the subscriber with fear and trembling, and it was done only in the gravest emergencies. Now the securing of a long distance connection is almost as simple as placing a local call, and the time required in handling toll calls has been reduced to the point that it takes only a little more time than a local call.

We believe that the traffic records mentioned above have been largely instrumental in bringing toll service up to its present high state of efficiency. These traffic records give the management of the telephone companies accurate information as to the quality of service that is being furnished the public. They also furnish information from which improvements are made from time to time.

It is the desire of the telephone companies to keep their service ahead of the public demand, and we in the telephone business take considerable pride in the fact that our service is well in line with all other modern improvements. But we must not be satisfied with just keeping up with the procession. We must anticipate the demand for telephone service of whatever kind and be ready to furnish it when the time comes.

Prompt Answers to Toll Line Signals

Only Solution to Efficient and Successful Operating Is the Prompt Answering of Toll Line Signals—Confidence in Service Created by Prompt Answers—Paper Presented at the Traffic Conference of Texas Association Convention

By Miss Ruby West,

Chief Operator, Haskell Telephone Co., Haskell, Texas

Now that practically all companies are using the C. L. R. method of operating, the subscriber for the first time as well as the operator realizes, the effect of slow answers to toll line signals. The subscriber now knows when the originating operator rings and how long it takes the distant operator to answer. This fact alone, without any other thing, should be an incentive for us to give prompt answers to toll line signals.

The very fact that this subject of prompt answers to toll line signals is discussed at all is an insinuation that some toll line operators are slow to answer; in fact, it amounts to almost an indictment against ourselves, to which I will plead guilty for some operators. There are sometimes real reasons for slow answers; and to get at this subject in a fair way, I am going to assume that the board is of magneto type —from one to three or four positions as is most often the case with Independent companies.

Let us first consider the one-position board where the operator has from 25 to 150 local drops to answer. Not infrequently, if she has three or four drops down at one time, she will try to restore them before answering her toll line signal. This presents a rather deplorable condition, for the operator knows from experience that her subscribers will "bawl her out" for indifferent and slow answers, while she will trust to Providence, and alibi herself, on the toll call, thinking subconsciously that it will scarcely be an hour before she will have the same experience from the calling office. Incidentally, she may be right in this assumption, but two wrongs never made one right. Her plain duty is to answer toll line signals first, as I will subsequently show.

This one-position board is an enigma; in fact, we can't deny our responsibility to our subscribers. The most that can be said for a one-position board with 50 to 100 lines and one or two toll circuits is that it is not 100 per cent efficient, nor can it be made so from a subscribers' viewpoint.

Next let us take up slow answers on a two, three or four-position board of the magneto type and try to account for slow answers on it. On a board of more than

one-position, it is assumed that the operating company would have from 150 to 600 subscribers, or a fewer number of subscribers, with an immense toll business. Under any circumstances they would employ at all times the necessary minimum of toll operators and also exchange operators with as high as five or six operators during a 24-hour period.

Theoretically, on a board of this size there is no excuse for slow answers, but we know that they do occur; first, from a sort of habit of indifference which may first be caused by one operator trying to operate such a board during relief periods, meals, or while Susie goes down to the drug store to get a drink or goes to the postoffice for a letter or leaves the board to telephone a friend. This congestion necessarily makes for confusion and slowness of all answers, because it leaves an impossible amount of work for the remaining operator or operators, and after the habit is once acquired, it takes the strictest of discipline to eliminate it.

I want to say another word about Susie's absence that is still further conducive to slow answers: When she returns from the drug store, postoffice or telephone, she is usually all thrilled about some news or gossip she heard. Naturally, before she can settle herself down to work, she has to "let it out of her system" by confiding to her co-workers all that has happened or been said during her absence.

Now, Susie is not only a loss to the efficiency record, but she gets the attention of the other operators. To that extent it slows up all of the work, starts the "germ" of indifference, slow motion and tends to get the entire force into lazy habits that reflect back on the operating company and actually classifies it as an asset to a town or an actual liability by keeping all subscribers and connecting operators sore, thereby making collections difficult.

We all agree that prompt toll line answers form the only solution to efficient and successful operating. By successful and efficient operating, I do not mean that only the subscribers get a fast and satisfactory service.

It also means that the operating company is getting action on its money or investment; wires are busy at all times and because of fast and prompt toll line answers, two circuits are doing the duty it would take three to do if they are slow. Not only is this true, but prompt answers defer the peak load, or to say the least they keep the peak load from getting too high, and less tickets accumulate. So with the foregoing we have a partial view of the results of prompt answers as well as slow ones and the cause of the latter.

We shall try to forget the slow ones and think only of the ideal, prompt answers. To get a set-up that would accomplish this would take a paper that would be long and tedious, for there are so many conditions and problems that one would have to consider to give an absolute way of doing it. But there are certain primary and elementary principles that have to be applied to any office to accomplish prompt toll line answers. Among them are regular hours, discipline, defining the importance of regular routine, no eating, talking or leaving the board while on duty; not allowing visitors in the operating room except on special occasions, and not permitting operators to "loaf" in the operating room while off duty.

In the first analysis, most companies provide enough equipment—switchboard positions—and a sufficient number of operators to handle the business in a satisfactory manner. As answering toll line signals comprises only one of many duties of a toll operator, I believe that an operator who thoroughly understands her work and operates her board according to standard practices, will never have any trouble in giving prompt answers to all signals.

I am afraid there are a great many operators who feel satisfied and think they are doing a good job if they are answering their subscribers and toll line signals promptly; but there is one signal which to my mind is the most important of all. That is cord circuit supervisory signal.

Do you realize that practically every time a cord circuit supervisory signal falls, some one, somewhere, is asking for help? It may be a subscriber who has received the wrong number on your local board; in toll work, it may be that the distant operator has received the wrong number, or on through connections wishes you to ring the distant operator again or to clear a connection. In both of these cases, slow answers mean not only aggravation to the operator but loss of time on the toll circuit; and as you know, loss of time always means loss of money to the company.

Prompt answers will give distant operators cause to give prompt answers. Prompt answers will help to show if the operator is interested or not. Prompt answers will give subscribers confidence in the service. Prompt answers will help to give both calling and called parties better service. Prompt answers will keep everyone in the right state of mind.

Bedroom Telephone Helps Woman Trap Burglar.

Presence of mind in an emergency—and a telephone—recently helped a Washington, D. C., woman to catch a burglar. While she was sleeping, she was awakened by footsteps in the adjoining room. The door between the two rooms was shut.

Reaching for the telephone beside her bed, she quickly removed the receiver from the hook and, in low tones, asked for the police department. She was able to give information of the situation without the intruder hearing her, with the result that the police arrived on the scene in time to prevent his escape.

Concrete Sewer Affords Path for Telephone Conduit.

Engineers for the Southwestern Bell Telephone Co. recently solved a problem of what to do with conduit buried at a crossing of the Frisco railroad in Poplar Bluff, Mo., and which the digging of a storm sewer made it necessary to move.

The wires formerly enclosed in the old tile and concrete conduit, will be run through three-inch pipe and imbedded in the top of a concrete sewer box. This top is ten inches thick and will afford ample protection.

Most of the business section of Poplar Bluff is supplied with service over wires enclosed in these tile and concrete conduits.

RELEGATED

By Miss Anne Barnes,

Traveling Chief Operator, Iowa Independent Telephone Association, Des Moines, Iowa

"Relegated" is defined by Webster as: "Laid aside; put aside; struck out; weeded out."

Not long ago I visited an office and saw a woman I had once known as the chief operator, sitting in a rather secluded corner, sorting tickets.

After 20 years' experience as a chief operator, there she was, sitting in a corner, doing a routine task, because her former position had outgrown her.

"What has she carried over from that 20 years so full of telephone progression?" I wondered.

One day I saw her working on the switchboard for a few minutes, due to a vacancy; and when I noticed how she fumbled the connections, heavily and uncertainly, I had my answer. She had carried over nothing! And so her company had not been able to salvage even an average operator's ability from her 20 years' record.

Never once while I was there did I hear the older operators speak of her fondly as "our old chief."

MORAL: "Lost: A precious period of 20 years set with golden opportunities. No reward offered, for it is lost forever."

Entertains California Association

California Independent Telephone Association Enjoys Unique Affair in Home of One of Its Members—Annual Meeting Held at Home of Aubrey Wardman at Whittier—His Career From Lineman to Millionaire Telephone Owner

By Fred C. Mendeck,

Commercial Superintendent, Whittier Home Telephone & Telegraph Co., Whittier, Calif.

Perhaps there is no better way of introducing this article than by a quotation from an article by Barker Bros. of Los Angeles in the May, 1928, number of "Better Homes, Modes and Manners."

"Eastbridge is one of those delightful estates that decided to settle at the foot of a mountain, have room to breathe, and be a credit to the traditions of graceful living in California.

Spacious grounds, splendidly landscaped, surround the house, and, of course, there are acres of beautiful, perfectly-groomed orange groves with deep, glossy foliage forming a perfect background for the stucco walls of the rambling villa; for the house, very suitably, is Spanish in architecture, and it is a villa—of 40 rooms and more. Through the entrance gates, a winding drive leads to the center of the house—the patio, with its old well, flagstones and flowers."

This was the meeting place of the California Independent Telephone Association on April 14, in its annual session. Here came the members of the association, and they brought their wives with them. There was something at this session that could and would interest the women.

The big-hearted host and hostess, Mr. and Mrs. Aubrey Wardman, threw wide open the entire estate, and without formalities some 40 families invaded it to make the most of a rare occasion.

In keeping with the environments, the predominant elements of the luncheon were Spanish. Lunch was served cafeteria style, the guests forming a line in couples, passing through the living room with its manifold color schemes in perfect harmony, its rich rugs and furniture all reflecting a style of Spanish period; and above all this beauty as a background hang two Flemish tapestries, one of the 16th and one of the 17th centuries.

From this we passed on through the entrance hall with its old Mediterranean atmosphere; thence through the dining room, with a full and perfect atmosphere of the Italian Renaissance which faded into a beautiful seascape of our own California Pacific coast; thence through the fine, spacious kitchen having all the semblance of a cafeteria arranged for this occasion. There the bill of fare was served in trays, and we passed out into the big patio where luncheon was eaten.

Aubrey Wardman, President of the Whittier Home Telephone & Telegraph Co., Who Entertained the California Independent Telephone Association at His Beautiful Residence.

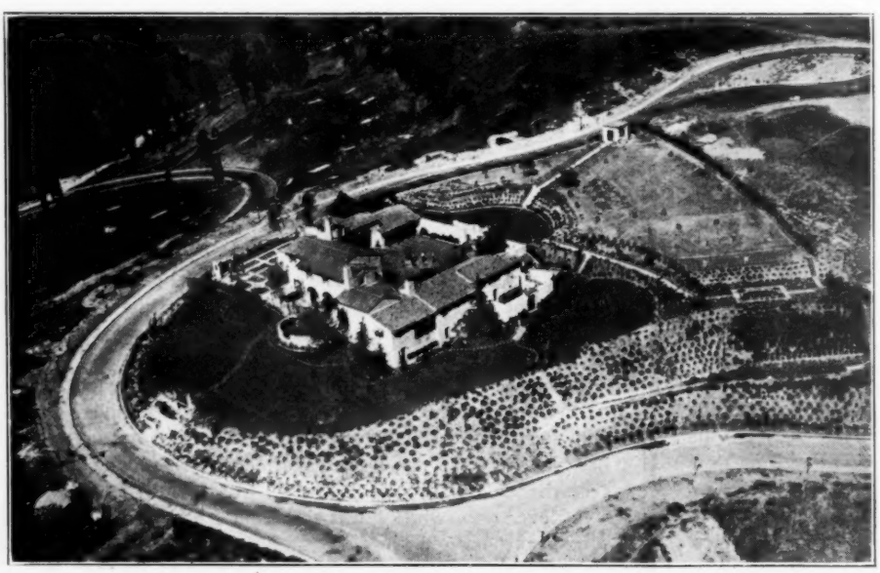
After lunch the men assembled on a large, awning-covered patio on the west side of the residence to attend to the association business, while the women enjoyed themselves in various ways.

But here we will leave the association affairs and write about the man himself—the man whose wealth is devoted to the happiness of others as well as himself.

Aubrey Wardman was born in Ontario, Canada, September 12, 1877. His ambition in boyhood seemed to be in the direction of structural engineering. At the age of 16 he started in the electrical construction work in Toronto, Canada. When he was 18 years of age he went to Detroit, Mich., where he was employed by the Detroit Street Railway Co. Later he was employed as lineman by the Edison company and the original Home Telephone Co. in Detroit. Next he was foreman for overhead construction for the interurban line running from Detroit to Ann Arbor.

Leaving Detroit he went to Cleveland, Ohio, where he worked for the Independent telephone company until 1901. In that year he took a position as overhead construction superintendent for the street car system, then having headquarters in Hempstead, Long Island, N. Y. But like hundreds of thousands of others back there in the East, he heard the call of the Rockies and then the peaceful valleys of the Pacific slope.

So in 1902 he went to southern California, securing employment with the Los Angeles Home Telephone Co., where he remained until 1903. In that year the Whittier Home Telephone & Telegraph Co. was organized, with headquarters in Whittier, P. T. Spencer owning the bulk of the



Airplane View of "Eastridge," The Estate of Aubrey Wardman, Where the California Association Held Its Recent Annual Meeting. The Entire Grounds of Mr. Wardman Are Enclosed by the Elliptical Paved Street.

stock. Mr. Spencer had also organized the Independent Construction Co. at that time, which company was constructing telephone plants in southern California.

Aubrey Wardman, or "Gus" as he is more commonly known, was employed in 1903 by Mr. Spencer as general superintendent, having charge of the construction of the Whittier Home Telephone & Telegraph Co. and later the Downey Home Telephone & Telegraph Co. and the Alhambra Home Telephone & Telegraph Co.

In 1910 Mr. Wardman purchased P. T. Spencer's interest in the Whittier and Downey companies, Mr. Spencer having died a year or two earlier. From that time he has guided these two companies safely and successfully.

At the time Mr. Wardman purchased the controlling interest of the Whittier and Downey companies, the combined fixed capital of the two was $157,800. At present, it is in excess of $857,500. Both companies are now full automatic. There are two main exchanges and four community automatic exchanges. Both of these companies have maintained a steady growth, having paid annual cash dividends since 1910.

Mr. Wardman's many years of experience in the telephone business have sharpened more finely his already keen business judgment, so that today he is an acknowledged authority on telephone financing and construction.

His strenuous years in the telephone work caused nervous debility, and in April, 1921, he went to a hospital for an operation.

When he returned to his office in July following he felt that a diversion from the usual telephone routine would be beneficial to his health and his telephone interests and decided to try his skill in oil. Accordingly, he bought a considerable portion of property in the Santa Fe Springs oil field then just developed south of Whittier.

Here again his keen judgment was his high trump. He now owns a considerable portion of the most important oil property in this field. Through intuition he knew what he had; he knew how much it was worth, and he also knew how much of this fabulous wealth he wanted. So he was ready to lease the property.

Some of the Members of the California Independent Telephone Association, Their Wives and Guests, at the Recent Annual Meeting on the Grounds of the Wardman Estate

Mr. Wardman has the happy faculty of quickly "sizing up" a man. He is amicable and courteous and pleasant to deal with, but frank and plainly outspoken. I recall one little incident that happened in his office one morning. To reach his office one had to pass by my office door. One morning there came by my door two large finely dressed men, having the appearance of financial giants. One might have assumed them to be Rockefeller and Pierpont Morgan. They went into Mr. Wardman's office and talked leases.

In about five minutes after they introduced themselves, I heard Mr. Wardman say: "Well, you can't tell me what I must do. That's my proposition; if you don't want it, you can go to h—." The men left then. But in half an hour they returned and signed the lease, giving him what he asked, and he has been getting it since.

Before he began his oil projects, he possessed ordinary wealth which consisted mainly of telephone property, orange groves and lemon groves. But his royalties from some 20-odd wells soon brought him into the ranks of a millionaire.

Mr. Wardman has a remarkable faculty for making friends and holding them. Perhaps more than any other one man he functions as a director of the affairs of his community. He donated $100,000 to Whittier College out of his first oil royalties. And today, in honor of his wife and untiring efforts, there are two magnificent buildings on the college grounds—Wardman Hall, a dormitory, and Wardman Gymnasium.

Mr. Wardman has surrounded himself with intelligent men and women with whom to carry on his telephone business. He is broad-minded and liberal toward them. He believes in keeping a good employe permanently. He selects them for their ability, and pays them well for it. He is always jolly and friendly with them, and any one of us will cheerfully and gladly do anything he wishes done because we like him and we like to work for him.

A Glimpse of the Spacious Living Room in the Wardman Residence at Whittier, Calif.—A View of the Elaborate Dining Room.

Telephone News Items From Europe

Idea of Telephone Service Placed in Correct Perspective at Meeting in Paris of the International Chamber of Commerce's Committee on International Telephony—Interesting Items From England and Other European Countries

By "Telephony's" Special Correspondent

The recent meeting in Paris of the International Chamber of Commerce's standing committee on international telephony was significant. In addition to the ordinary members of the committee, who are business men representing telephone-users in their respective countries, there were present representatives of the C. C. I. (Comité Consultatif International des Communications Telephoniques à Grande Distance), an official technical body composed of nominees of the various European states telephone administrations.

This unfettered interchange of views between, on the one hand, business men voicing their requirements, and on the other, the administrations putting forward the technical case, cannot fail to do good and to produce in course of time the desired results.

The committee met in an atmosphere of optimism, for the International Chamber at its annual congress at Stockholm had determined by resolution to accord international telephone service a definite place in its program of activities, thus elevating the committee from a temporary *ad hoc* status to that of a permanent standing committee. Moreover, the very first document which the committee was invited to consider was a report, prepared by the C. C. I., on the extent to which facilities for telephone calls between European countries are now available and on the use which is being made of these facilities. In both directions the report provides evidence of distinct improvement.

It is clear once again that the provision of facilities for European long distance telephone calls itself stimulates the traffic; and this was a point which the business interests were quick to seize upon, as justifying their claim that the policy of each state administration ought to be to seek to head the demand, and not, as in many cases at present, to drag along reluctantly at its tail.

Most significant, however, to my mind, was the change of viewpoint which pervaded the whole proceedings. It is undeniable that at previous meetings the committee was not sure of its ground, and was, to a certain extent, groping for a policy and a clear-cut line of action. As was perhaps inevitable, there was a distinct tendency to waste time on unessential points, and to concentrate discussion on comparatively trifling issues of charges, delays, special classes of calls, and so on.

Now all this is swept away, or at any rate relegated to its proper portion. There emerges the vision of telephone service—rapid, efficient, uniform, and costing whatever may be necessary to give all parties concerned in the transaction a fair deal—as an essential factor in communication between countries, and so, by logical development, as an equally essential factor in trade between countries, in the removal of trade barriers, and in that general improvement in the potentialities of intercountry trade which Europe so urgently needs and so ardently desires.

This is clearly an advance towards clarification of thought, and a step towards the placing of the idea of telephone service in its correct perspective.

To those of us who have in one way or another some connection with telephone service, it was a revelation—and a most encouraging one—to hear the average telephone user, at a telephone meeting, discuss the economics of communication in preference to the cost and the occasional irritation of faulty service.

The first few years after the war were devoted by business men to the problems of production. We have, largely, solved them; now we must think of distribution and transportation, and we shall be giving our preferential attention to these aspects during the next few years.

The key-note is communication. "We want quick, efficient communications more than anything else to help us with our marketing problems. Hence our interest in what you, the telephone administrations of Europe, are doing and planning to do to help us in the way of telephone facilities."

Such, in very brief summary, was the line of talk and thought being expressed and explored by business men at the Paris meeting. It is both significant and valuable, and will undoubtedly serve as an encouragement to all those whose mission it is to supply and extend telephone service.

A comprehensive resolution was passed by the committee calling for the early provision of more extensive facilities, for the maximum possible protection against interruptions, for satisfactory audition and the cutting down of delay, for the provision of international lines in the interests of service without regard to political considerations and for greater publicity, to be undertaken by governments, for existing international services and new services as established.

Some Qualities to Cultivate.

Be prosperous. At least, determine to be prosperous.

Be ambitious, but sanely ambitious.

Be patient and the world is yours.

Happiness is largely a state of mind.

Hold your temper and your tongue.

Reliability rates ahead of ability.—Excerpts from the Memorandum Book of Theodore Gary.

King Edward's Telephone.

When the Prince of Wales takes up his residence in Marlborough House, which is now being prepared for him, he will be able to show his friends the telephone that was installed there for his grandfather.

It had originally been fitted up on H. M. S. Thunderer in 1878, and was acquired and installed in Marlborough House at the express wish of King Edward when he lived there as Prince of Wales. Until then no telephone had been installed for private use.

Berlin Develops Short-Wave System.

According to the "Berliner Tageblatt" wireless telephony and picture transmission tests between Berlin and Tokio by the short-wave system will be undertaken this summer, and the necessary transmitting and receiving stations are being constructed.

It is hoped, too, to open a direct telephone service to New York, so cutting out the need for relaying through England. Berlin-Mexico, Berlin-Siam and Berlin-Buenos Ayres services are also contemplated.

France Adopts Telephone Recorder.

An apparatus which records a telephone conversation in much the same way as the dictaphone, and enables it to be reproduced at will, has just been passed by the French Posts and Telegraphs Department as a permissible addition to the telephone.

Half an hour's conversation can be recorded on one cylinder, and can be planed off when it has served its purpose. The planing-off process can be repeated a hundred times before the cylinder becomes useless. It will be installed for an additional yearly payment of $2.

King's Copyright in Directories.

An interesting case confirming the King's copyright in telephone directories has recently been settled in the courts.

Several years ago an enterprising firm of printers conceived the idea that, if they pirated the telephone directories and distributed the pirated editions gratis, they might reap a handsome income from ad-

vertisements. As a result, the revenue of the Post Office was adversely affected. Moreover, as the same care was not taken with the pirated copies as with the official ones, wrong calls were constantly being received.

The Post Office accordingly in 1922, obtained an undertaking from the defendants, but shortly afterwards another company was found, and the same thing began again. Still later this second company split up, and its components formed separate companies for similar purposes. The judge has now granted an injunction against the defendants, with £300 damages. It was stated that in case of a repetition of the offense a considerably larger sum in damages would be claimed.

World's Longest Submarine Cable.

What is claimed to be the longest submarine telephone cable in the world is now under construction in Germany. It will connect Sweden with Finland, and will consist of 132 miles of underwater cable and 25 miles of land line in Finland. It will be 45 millimetres thick in the Swedish portion, and 50 millimetres in the Finnish, and will enclose nine speaking wires.

It will be laid between Norrtalje in Sweden and Mariehamm in Finland, by way of the Aland Islands. The cost of the cable will be about $737,500, of which more than one-third will be borne by Finland. It is to be delivered in 6½ months, and it is expected that it will be working in October or November.

Progress of Company, Rochester, N.Y.

Annual Report of Rochester Telephone Corp. Tells of Growth During Past Year and Possibilities for Future Growth—Discussion of the Present-Day Costs of Service—Charts and Curves Interpret Financial Figures in Report

The annual report of the Rochester Telephone Corp., issued recently, is presented in a remarkably human and interesting manner. The reading matter is broken up with charts illustrating different items described, which graphically make the figures clear. Some of the charts are reproduced on these pages.

Photographs are given showing various parts of the exchange, such as the test board and special power plant installed in 1927 for the long lines repeater station, both at the main exchange at Rochester; also a section of the garage and of the school room of the plant department, and a part of the plant executive offices. On other pages are illustrations of the operators' restroom and the interior of the Monroe exchange; the traffic department cafeteria, and section of the operators' school at the main exchange.

John P. Boylan, president of the company, in his report to the stockholders, says in part:

Gain in Telephones.

"During the year the corporation added a net total of 5,712 telephones and acquired 318 telephones by the purchase of a connecting company, making a total net gain of 6,030 company-owned telephones for the year.

As has been the case in previous years, the bulk of the increase has been in Rochester, less than 10 per cent of the growth since December 31, 1921, being in the central office districts outside of Rochester. Of the total number of company-owned telephones, about 80 per cent were served from Rochester central offices at the end of 1927, as compared with 73 per cent at the end of 1921.

The progress of the corporation is, consequently, intimately bound up with the progress of Rochester. With 19.2 telephones per 100 of population at the end of 1927, even the existing population still presents a considerable market for telephone service, which, added to the market afforded by the growth of the community, gives assurance that the corporation's business will continue to grow, year by year, for many years into the future.

Additions to Plant.

"During the year the gross additions to plant and equipment amounted to $2,147,459. Plant and general equipment amounting to $949,218 were retired from service during the year, making the net additions to plant for the year, $1,198,241.

As was stated in the corporation's report for the year 1926, the properties of the predecessor companies were acquired at a cost based on 1910-1914 price levels, less accrued depreciation to August 1, 1921. As acquired, the properties represented an investment of about $120 per telephone, a very low figure. Since August 1, 1921, there has been a progressive rise in the investment per telephone, the amount being $160 at the end of 1927. The principal reason for this increasing investment is that the prevailing price levels for the materials and labor which enter into the cost of plant are far higher than the 1910-1914 levels. As more and more of the original plant is displaced, it is expected that the investment per telephone will rise still higher, although not as rapidly as heretofore.

It is true, of course, that advances in the art of plant design, and more efficient construction methods, have effected great savings in construction costs, but these together have not been large enough to offset entirely the increased costs of labor and material.

Operating Revenues and Expenses.

"Operating revenues for the year 1927 were $4,473,808.89, an increase of $305,808.62 (7.3 per cent) over the preceding year. The revenues as a whole have been greater each year than those of the preceding year and they have been very stable under widely-varying business conditions.

The trend of operating expenses per telephone, including current maintenance, continued its downward course, and those expenses were less than in 1927 than in any preceding year. However, due to the increasing amount of plant, per telephone, the costs depending on the cost of plant, including depreciation, taxes and the cost of capital (interest and dividends) were higher than in any preceding year.

While the over-all effect of the addition of improved outside plant and central office equipment has been the reduction of operating expenses so that so far they have practically offset the rising fixed charges (taxes, depreciation, interest and dividends) which follow upon increased investment, the changes in the distribution of the cost of service per telephone exhibit plainly the effect of the increasing investment in plant.

While the average amount of plant per telephone, including general equipment, has risen from $119.60 at August 1, 1921, to $160.28 at the end of 1927 (an increase of 34 per cent) the total cost of operation, including fixed charges on the increased investment, has practically held its level. It was in 1927 only about 3.5 per cent above the lowest year in the corporation's experience (1924) and about 0.76 of one per cent above the six years' average.

Although large amounts of new plant have been placed of types requiring less maintenance than the plant replaced, the saving so effected is not yet reflected in the expense of current maintenance. Current maintenance expense is made up of two parts; the costs of ordinary repairs of plant, and the costs of rearrangements and changes. To effect coalescence of the new plant which is built, either additional or in replacement of existing plant, with the existing plant which is to remain, usually requires more or less extensive rearrangements of the latter.

The costs of repairs have declined with the addition of increasing amounts of new and well-designed plant, but the costs of the rearrangements and changes of existing plant which have been required by reason of the addition of new plant have held up the level of the total of current maintenance. These rearrangements and changes in many instances mean modernizing the plant and making it more adaptable to present-day requirements.

In that sense they are real betterments of the property. However, since they do not add new units to the property, the costs of making them are included with operating expenses. The fact that there were originally two separate plants which had to be unified has made the costs of rearrangements and changes higher than they would have been were only a single property involved.

Except for the Stone central office district (Rochester) where extensive rearrangements of plant will be required when that central office is replaced, the rearrangements which were part of the work of unification of the properties have been completed, and as a consequence the current maintenance will begin to reflect the savings which are being effected by reason of the increasing preponderance of new and improved plant.

Replacement of old plant has carried with it reduced charges for depreciation, per dollar of investment, but because the investment, in terms of plant per telephone, has increased, the depreciation per telephone has likewise increased, and was larger in 1927 than in 1926. Depreciation charges are based upon the amount of plant in service, and different rates are applied to different classes of plant. Depreciation charges build up the reserve for accrued depreciation, the unused portion of which is invested in going plant.

The composite depreciation rate has declined from 6.5 per cent in 1922 to 5.5 per cent in 1927 (comparing favorably with that of other companies), but the aggregate amount charged to depreciation has increased from $483,000 in 1922 to $749,000 in 1927. Depreciation charges in 1927 increased more than $100,000 over 1926, principally by reason of the placing of the Monroe central office in service in 1926. This plant was placed in service so late in 1926 that the added charges by reason of it had little effect on the 1926 figures.

Because this additional plant included more than the usual amount of facilities designed for future use, depreciation (and also the other expenses which are related to the amount of plant investment) showed more than the normal increase, both in total, and per telephone, over the preceding year.

Traffic.

"The volume of traffic handled daily, and the monthly cost per telephone, are given in the table following. Traffic expense is the largest single item of operating expenses. Consequently, the reductions shown have contributed quite materially toward the reduction in expense of operation.

Year.	Average daily number of messages.	Traffic expense per telephone per month.
1922.....	264,100	$1.43
1923.....	286,000	1.33
1924.....	303,900	1.23
1925.....	355,000	1.18
1926.....	371,200	1.15
1927.....	387,400	1.11

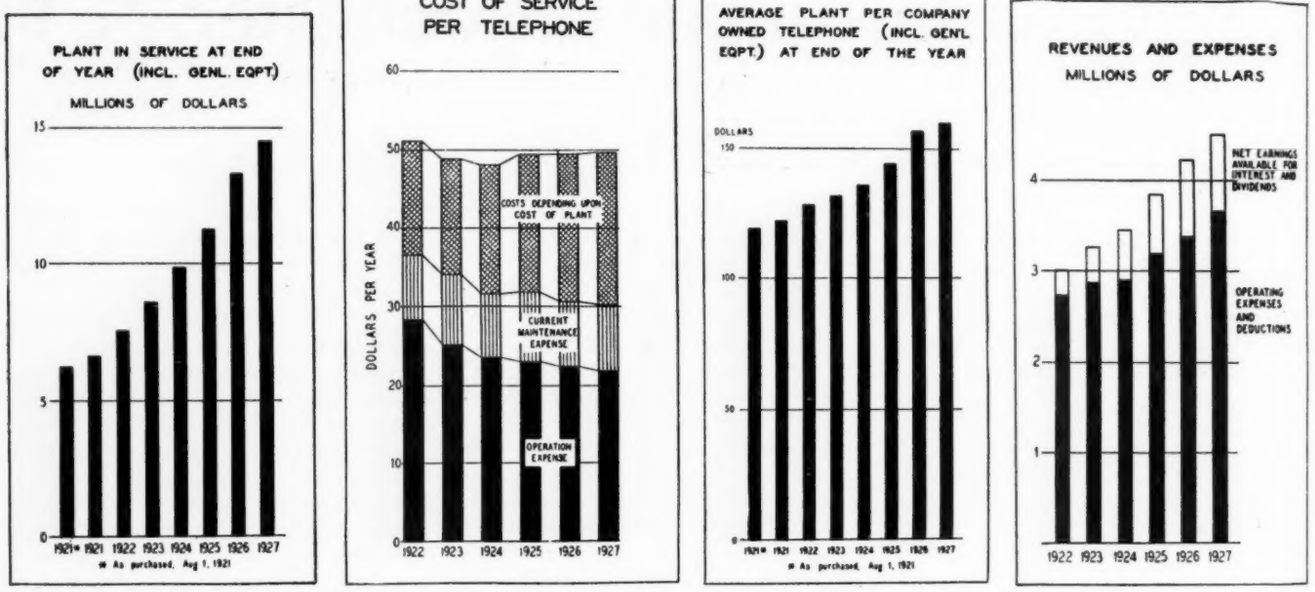
During the year considerable progress was made toward the completion of the installation of so-called "straightforward" trunking between the Rochester central offices, the installation of which was begun in 1925. This is an improved method of handling calls which originate in one central office and terminate in another, which makes for the more direct and more rapid completion of such calls. As a result there has been improvement in the service and lessened traffic expense.

During the year long distance traffic has been speeded up by the adoption of the "Combined Line and Recording" method of operation, which permits the calling subscriber to remain at his telephone while the calls is being completed, instead of waiting for the operator to call him, as in the former practice.

Further improvement in the handling of long distance calls has been effected by centering such traffic, formerly handled at 32 centers by combination local and long distance operators, at five strategic points where it is handled by skilled long distance operators.

Net Earnings.

"The net earnings available for interest and dividends in 1927 were $842,296.46, representing a return of 6.04 per cent on the average plant in service, including general equipment. The net earnings were smaller in 1927 than they were in 1926, because, while the revenues in 1927 were normal, the expenses were above normal, due principally to the large amount of plants added late in 1926. Interest on funded debt was earned 2.84 times, and interest charges as a whole, 2.59 times. The dividends on first preferred stock were earned 3.96 times. Other dividends were earned 1.57 times.


PLANT IN SERVICE AT END OF YEAR (INCL. GENL. EQPT)
MILLIONS OF DOLLARS
COST OF SERVICE PER TELEPHONE
DOLLARS PER YEAR
COSTS DEPENDING UPON COST OF PLANT
CURRENT MAINTENANCE EXPENSE
OPERATION EXPENSE
AVERAGE PLANT PER COMPANY OWNED TELEPHONE (INCL. GENL EQPT) AT END OF THE YEAR
DOLLARS
REVENUES AND EXPENSES
MILLIONS OF DOLLARS
NET EARNINGS AVAILABLE FOR INTEREST AND DIVIDENDS
OPERATING EXPENSES AND DEDUCTIONS

Some of the Interesting Charts in Annual Report of the Rochester Telephone Corp., Rochester, N. Y.

Personnel.

"The corporation has a well-organized and loyal personnel. At the end of 1927, there were 1,719 employes, a decrease of 6 during the year.

The total number of employes per 100 telephones is at the lowest level so far attained, while the average pay per employe was larger than in any prior year. Some pertinent data as to employes and payrolls are given below:

Year.	Avg. number of employes.	Number per 100 telephones.	Annual payroll.	Amount per employe
1922...	1,264	2.25	$1,687,595	$1,335
1923...	1,434	2.32	1,904,232	1,328
1924...	1,571	2.29	2,080,936	1,325
1925...	1,588	2.13	2,136,279	1,345
1926...	1,676	2.07	2,281,203	1,361
1927...	1,744	1.99	2,413,032	1,384

The corporation maintains an employes' benefit plan and has established a reserve in support of it, the integrity of which is maintained by charges to operating expenses. During 1927, payments of benefits for sickness, death, pensions, etc., amounted to $45,281.65, and were made to 299 employes or their families. The corporation is making systematic and continued efforts to conserve the health of its employes, and is conducting continuous accident prevention activities.

The corporation maintains a savings plan in accordance with which it makes stipulated deductions from employes' wages, and deposits them in a savings bank to the credit of the individual employes who have availed themselves of the plan.

The corporation also makes deductions from employes' wages for the payment of life insurance premiums, cooperating in this way with one of the larger life insurance companies. Under this arrangement, employes may buy life insurance under any of the forms of contract available, the premiums being deducted for insured employes' wages (one twelfth of the anual premium each month) and remitted to the insurance company by the corporation.

Public Relations.

"The corporation's relations with its subscribers and the public continue to be most satisfactory. Except those at the beginning of its operations, which were referred to in its report for the year 1926, this corporation has had no formal proceedings as to service or rates before the public service commission."

Financial Statement of Southern California Telephone Co.

The Southern California Telephone Co., operating in Los Angeles and vicinity, reports to the California Railroad Commission its 1927 operating revenue at $21,110,390.28, as compared with $18,917,911.60 for 1926.

The operating expenses, excluding taxes for 1927, are reported at $13,061,219.96, and at $12,200,155.56 for 1926, leaving net operating revenue of $8,049,170.32 for 1927, and $6,717,756.04 for 1926. During 1927, taxes charged to operation amounted to $1,922,227.51, and for 1926 to $1,216,386.96. Deducting the taxes leaves operating income of $6,126,942.81 for 1927, and $5,501,369.08 for 1926.

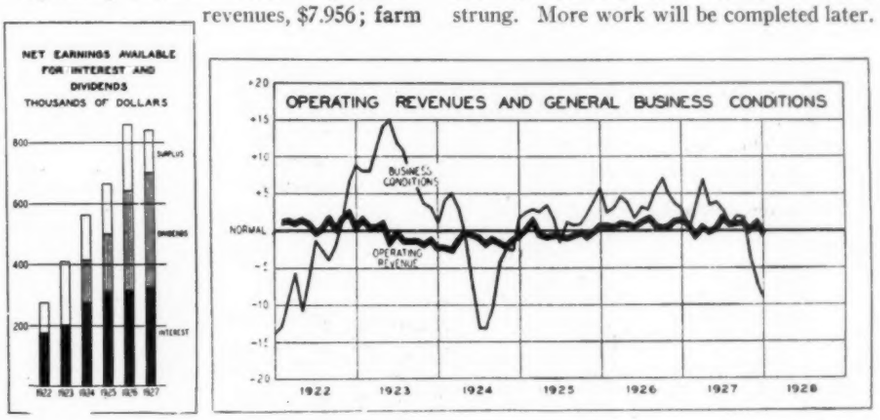
Adding to the operating income, the non-operating income of the company and deducting non-collectible revenue and rents, results in a gross corporate income (which represents the amount available for interest, amortization of debt discount, other fixed charges, non-operating expenses, dividends and surplus), of $5,727,472.59 for 1927, and $5,092,428.76 for 1926.

Financial Report of Union Company at Wausa, Neb.

The annual report of the Union Telephone Co. of Wausa, filed with the Nebraska State Railway Commission, shows the following results for 1927:

Fixed investment, $66,815; total assets, $94,942; funded debt, $8,000; stock outstanding, $51,200; depreciation reserve, $21,155; surplus, $8,175; profit and loss, $660.

Operating revenues were: City station revenues, $7.956; farm revenues, $4,159; switching revenues, $2,802; total exchange revenues, $14,917; total revenues, $4,198; miscellaneous revenues, $1,593, and total revenues, $20,708.



Graphic Presentation of Financial Figures in the Annual Report of the Rochester Telephone Corp., Rochester, N. Y.

Operating expenses were: Maintenance, $4,670; depreciation, $1,802; traffic, $4,257; commercial, $4,853; total expenses, $15,583; operating income, $5,125; total income, $6,786; taxes, $1,160; interest, $564; dividends, $4,096, and profit and loss, $660.

The company has 217 stations at Wausa, 193 at Crafton and 617 switched stations. Emil Engdahl is president, A. L. Shopper, vice-president and manager, and J. E. Baggstrom, secretary and treasurer.

Small Losses; Union Company, Owosso, Mich., Net Increases.

While the number of telephones in service and the gross operating revenues of the Union Telephone Co., Owosso, Mich., for the fiscal year of 1927, reflect a rather quiet business period for the company, the losses sustained by destructive storms and other causes were less than usual and as a result, the net operating profits of the company were in excess of the average normal year, according to the annual report of L. L. Conn, who is secretary and treasurer of the company.

The income account submitted by Mr. Conn showed a total income of $616,416.21, and a total expense and taxes of $340,082.88, leaving net earnings of $276,333.33. Dividends paid amounted to $132,000 and a balance of $144,333.33, was left for depreciation reserve and surplus.

At the end of the last year, the company had 15,498 telephones in all its exchanges, an increase of 23 over 1926. The Owosso-Corunna exchange had 3,610 telephones at that date, an increase of 43 over 1926.

Many improvements have been planned and executed throughout the system during the past year, the most important of which were at Edmore and Lakeview. At Edmore, 80 per cent of the plant was rebuilt.

The rebuilding of a considerable part of the rural lines out of Owosso is now under way, and 23 miles of new poles have been erected and 120 miles of new wire strung. More work will be completed later.

All officers and directors of the company have been re-elected for the coming year at a recent annual meeting. They are: John H. Fildew, Pontiac, president; John B. Chapin, St. Johns, and W. S. Cooper, Owosso, vice-presidents; L. L. Conn, Owosso, secretary and treasurer; W. J. Melchers, Owosso, general manager; John Britten, Owosso, plant superintendent and Samuel G. Gilliam, auditor.

The directors, in addition to the officers, are: Frank F. G. Thiers, Mt. Pleasant; John T. Millman, St. Johns; William A. Bahlke, Alma; John E. Gerow, Ovid; Calvin P. Bentley, Owosso, and Charles W. French, Cadillac.

Fall City, Neb., Company Paid No Dividends Last Year.

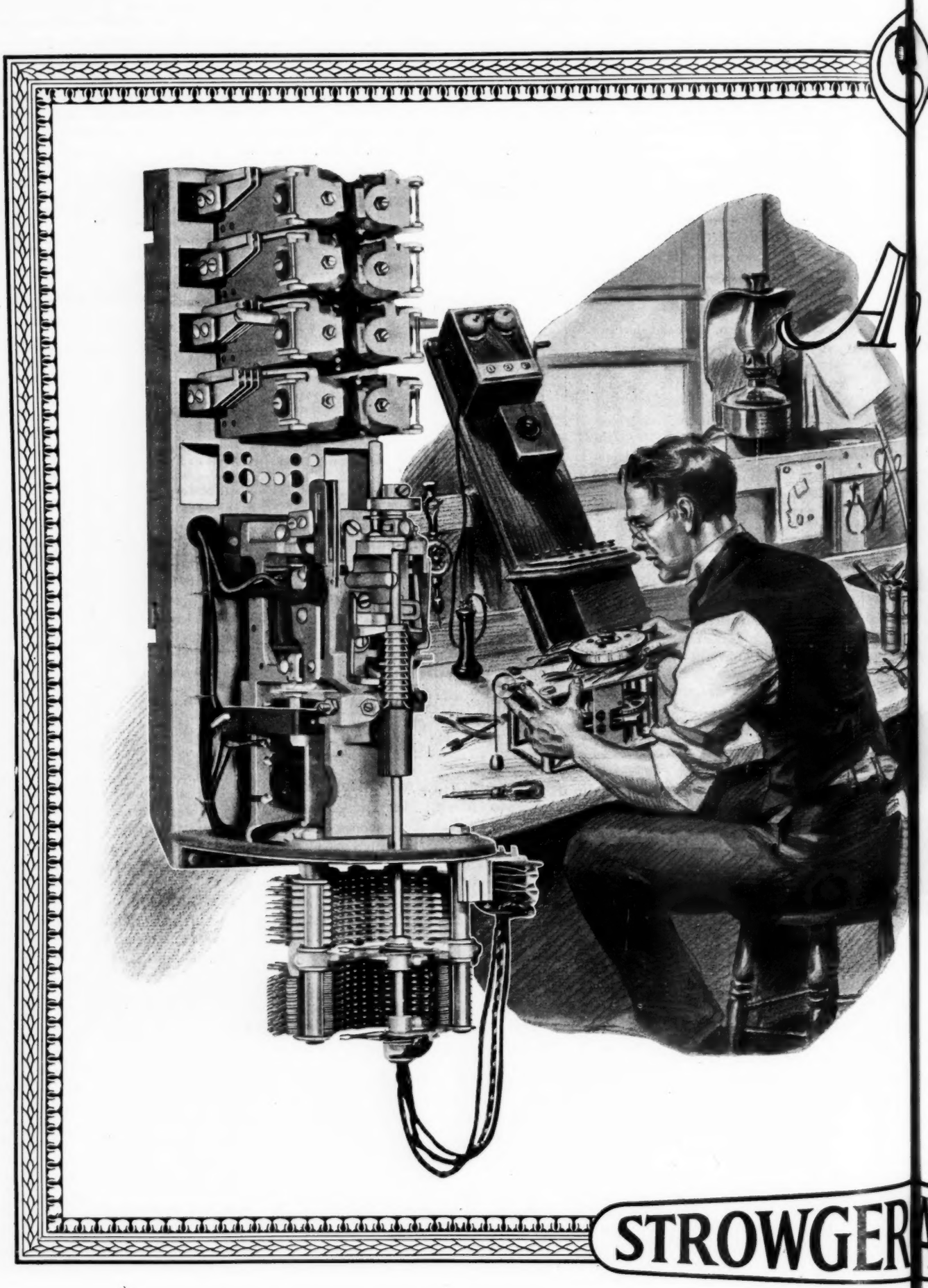
The annual report of the Southeast Nebraska Telephone Co. of Falls City, filed with the Nebraska State Railways Commission, shows: Fixed investment, $172,693; total assets, $198,691; stock outstanding, $68,666; depreciation reserve, $72,302; surplus, $48,935.

Operating revenues were as follows: Station revenues, $28,709; switching revenues, $10,100; toll revenues, $6,896; miscellaneous, $182; total revenues amounted to $45,888.

Operating expenses were: Maintenance, $10,458; depreciation, $6,426; traffic, $13,946; commercial, $11,393; total expenses, $42,225; operating income, $3,663; taxes, $1,228; interest, $17; dividends, none; profit and loss, $2,418.63.

The company has exchanges at Falls City, Barada, Salem, Verdon and Creston, a total of 2,700. The net gain for the year was 147.

Officers are: T. H. Gist, vice-president; A. T. Duerfeldt, treasurer; E. H. Towle, secretary and manager.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Here and There in Telephone Work

"Big Evening" of Employes' Athletic Association at Ft. Wayne.

The second annual banquet meeting and election of officers of the Home Telephone Athletic Association was held on April 11 in the new warehouse of the Home Telephone & Telegraph Co., Fort Wayne, Ind. Henry A. Barnhart, president of the Indiana Telephone Association, was the principal speaker. His talk was enthusiastically received by the more than 200 employes of the company who were present.

Following the banquet, Frank E. Bohn, president of the Fort Wayne company, introduced Mr. Barnhart, whose address teemed with sparking humor and serious thoughts and comments.

Declaring that the Fort Wayne telephone plant was recognized as the best and most efficient in the country, Mr. Barnhart stressed the point that this was not accomplished by individual effort, but that it took the combined effort and cooperation of the entire Home organization to establish and operate the plant successfully and furnish the telephone service of which the citizens of Fort Wayne should be justly proud.

The speaker regaled his audience with humorous anecdotes and stories picked at random from his vast experience during his most eventful life as a successful farmer, newspaper man, Chautauqua speaker, congressman and operating head of a successful telephone company, concluding with a recitation in laudation of the flag of our country.

Mr. Barnhart's address was followed with the keenest interest and delight by his audience, which found expression in prolonged applause during his address.

The election of directors which followed resulted in the selection of Frank J. Baker, operating engineer, who has been president of the association the past year; Frank X. Staub, equipment engineer; Lewis E. Gerding, chief accountant, and Henry F. Krabach, plant accountant. Officers of the association for the coming year are: Frank X. Staub, president; George Wagner, vice-president; Miss Lucinda Henline, secretary; and Henry F. Krabach, treasurer.

Prizes were also awarded to winners in the various plant athletic activities. After the evening's program a social session was held by the women and men members present. This is the first annual banquet to be held in the new recreational center, and judging from the comment of the guests, the entire affair was a highly successful one.

Notes for the Maintenance Student; Electrical Resistance.

By John A. Bracken.

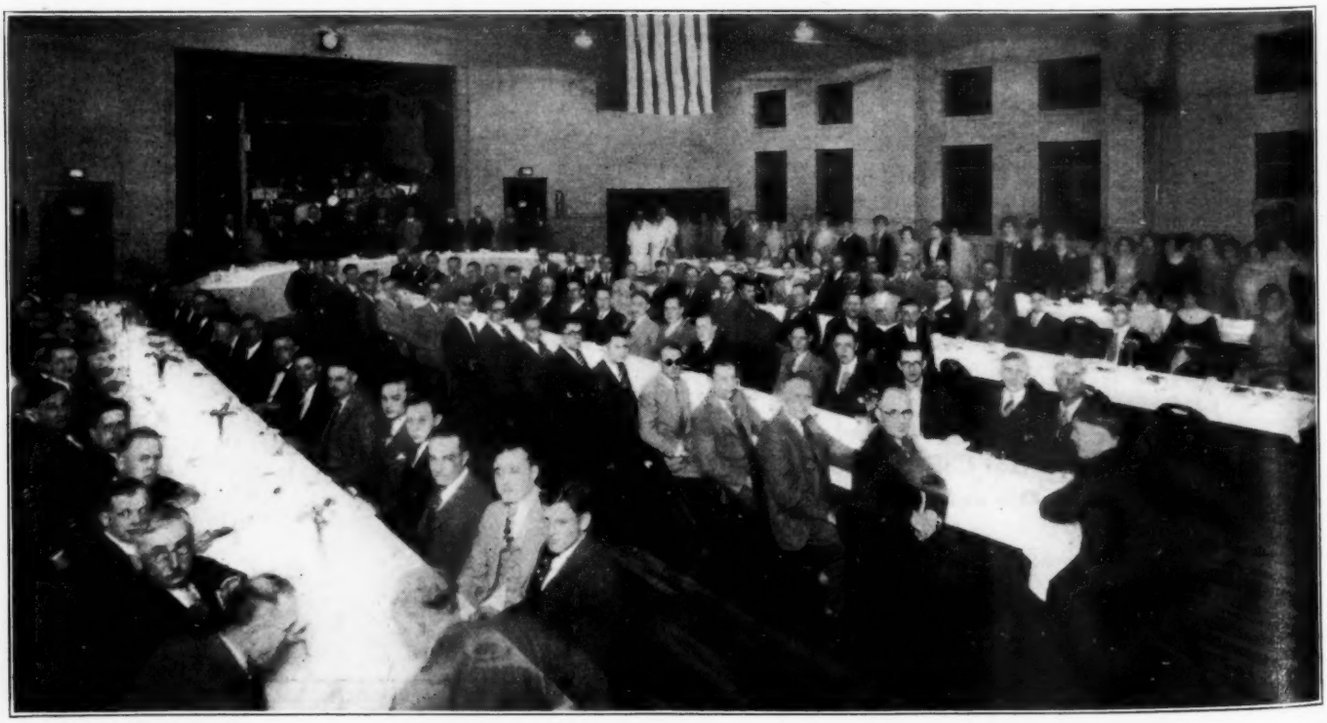
Electrical resistance is the physical property of a substance by virtue of which the substance opposes or tends to obstruct the flow of an electric current. This agrees with what we know about the resistance offered to the flow of water through pipes, due to the friction between the running water and the sides of the pipe.

Resistance is the opposite of conductivity. A substance freely conducting an electric current would have a high conductivity. Chemically pure copper, therefore having a high conductivity, offers a low resistance to the passage of an electric current. Commercial copper, used in making wire, switches, bus bars, etc., for telephone purposes, is not considered to be chemically pure, and the presence of impurities increases the resistance of the metal.

Electrical resistance depends upon several factors. First, upon the specific resistance of the substance; that is, the particular resistance a substance offers to the passage of electricity through it, compared with the resistance of some other substance taken as a standard. For example, taking the specific resistance of gold as one, iron would be nearly seven. Gold would have seven times the conductivity of iron, but iron would have seven times the specific resistance of gold.

The electrical resistance of a substance also depends upon (1) its diameter, or cross-sectional area, (2) its length, (3) its temperature, and (4) its composition; that is, the material of which it is made.

There are some substances which offer a very small resistance, others which offer



More Than 200 Employes of the Home Telephone & Telegraph Co., Fort Wayne Ind., Attended the Second Annual Banquet Meeting of the Home Telephone Athletic Association, Held at the Company's New Warehouse.

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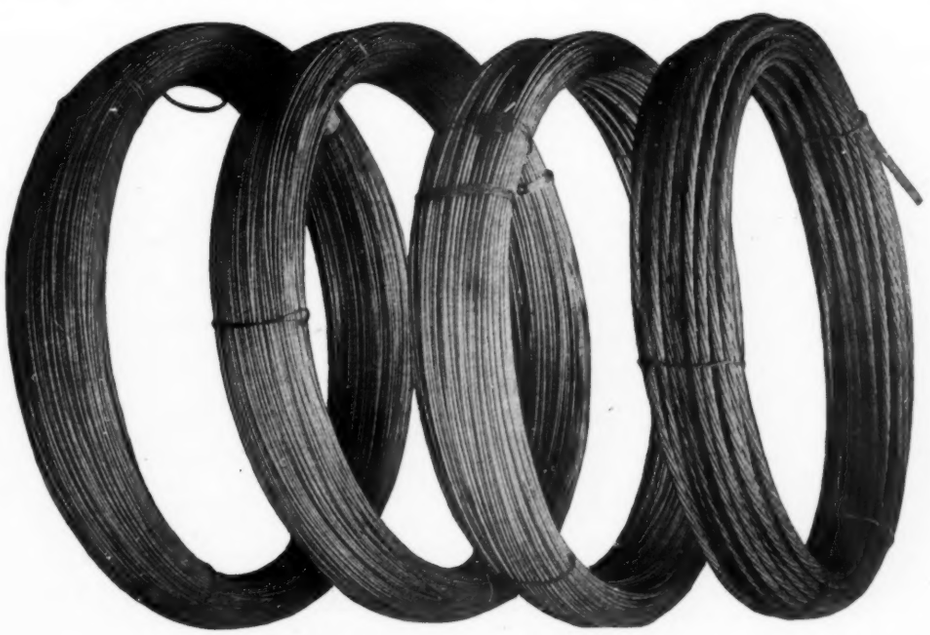

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a very great resistance to the passage of electricity. To compare the electric resistance of different wires, the resistance of a mil-foot is taken as a constant (that is not subject to change). It is always the same for wire of the same material, but is different for each kind of metal.

The constant represents the resistance at 32 degrees Fahrenheit between the opposite ends of a standard unit, which is used in computing the resistance of a wire of correspondingly greater length and area than the mil-foot. The mil-foot is based upon one foot of wire with a cross-sectional area of one circular mil. The expressed value of the mil is one thousandth of an inch. Wires usually being circular, are compared by squaring, or multiplying together, their diameters. The resistance of any wire is equal to its length in feet multiplied by the resistance of a mil-foot; and this product is divided by its area in circular mils.

The electrical resistance of wire used in telephone line practice is often specified by its weight per mile. For example: two miles of any given size wire will have twice the resistance of one mile of the same wire.

Again, if we have two wires of equal length, one of which has a cross-sectional area ten times as great as that of the other, and assuming uniform quality of both wires, then the electrical resistance of the larger wire will be one-tenth that of the smaller; and as the weight per unit length—that is, the resistance of a conductor of uniform size—varies directly as its length and inversely as to its weight per mile, it follows that the resistance of a wire weighing 500 pounds per mile, will equal one-fifth the resistance of a wire weighing 100 pounds per mile.

This law governing electrical resistance permits the use of a mile-ohm for all sizes of wires, the mile-ohm being the product of the resistance of a given wire per mile and the weight per mile.

In all this the temperature has been assumed to be constant, but as previously stated, the resistance of a conductor varies with its temperature. With increase in temperature, the resistance of nearly all metals rises; that is, the hotter a wire becomes, the greater its resistance to electric current flow. In the case of carbon and most liquid conductors—mercury excepted—the resistance decreases with the rise in temperature.

Everything through which electricity travels offers resistance to it. This is shown by the fact that whenever a current flows, there is a fall of potential along the conductor which always takes place by reason of the conductor resistance.

The fall of potential is equal in any part of a circuit to the product of the current strength in amperes and the resistance of that part of the circuit. The unit of electrical resistance is the ohm.

Exchange Executives and Representatives Discuss Plans.

Local managers, service department and commercial representatives from the 44 exchanges in the Lincoln district of the Lincoln Telephone & Telegraph Co. were guests of the company officers on May 5, at the headquarters at Lincoln, Neb. Representatives from the Lincoln zone were also in attendance. The conference was in charge of F. E. Behm, district manager, who was assisted by M. T. Caster, plant superintendent, and his assistant, Milton Barratt, and W. E. Bell, commercial superintendent, and his assistant, H. F. McCulla.

Mr. Caster presented at considerable length and in detail the new plans and specifications for pole line and rural plant construction. These are designed to minimize the loss of outside plant from heavy snow such as inflicted heavy damage during the storm of April 6. Mr. Barratt brought up for discussion the following matters; Substations, substation equipment, protectors and drops. A review of the 1928 handbook of specifications was also given.

Following a luncheon, General Manager J. H. Agee spoke briefly on the importance of furnishing telephone service from the subscriber's viewpoint. Telephone service, he said, must have certain outstanding characteristics, such as: It must always be available; it must be prompt; it must be accurate. One of the most essential features is that telephone companies must cooperate in every way in meeting and satisfying the subscriber's demands for telephone service. Mr. Agee paid a glowing tribute to the men for the prompt and efficient restoration of service following the recent disastrous storm.

The afternoon was given over to the discussion of the commercial program, Mr. Bell speaking on the relationship of this program to the commercial department. H. F. McCulla led the discussion on personnel, methods and practices, public activities, commercial service studies and surveys, organization and directories. Exchanges represented were Beaver Crossing, Wahoo, Valparaiso, Friend, Havelock, Bennett, Raymond, Milford, Greenwood, Nebraska City, Syracuse, Douglas, Weeping Water, Plattsmouth, Ashland and Seward.

Satisfactory San Francisco Hotel Telephone System Installation.

The circulatory system of an hotel is its telephone service. One can hardly imagine or be reconciled to an hotel in this day and age being capable of operation without the magical telephone. T. Delury, of the Pacific Telephone & Telegraph Co., San Francisco, Calif., who is a particularly good friend of all hotel men, took a personal interest in the Hotel Mark Hopkins telephone system installation. That the work under his direction was well done has been evidenced by the perfect operation of the system from the day it was installed.

The Hotel Mark Hopkins switchboard is located on the mezzanine floor in an exceptionally well-lighted and ventilated room, fronting on both California and Mason streets. The switchboard has positions for four operators, who are on duty during busy hours. At other times from one to three operators handle calls. Eight operators in all are used during the 24-hour day.

The cable equipment installed by the telephone company in the hotel was designed to meet every requirement of guests and personnel. Two 250-pair cables were placed extending from the basement to the top floor of the building, via the elevator shafts. A small cabinet on each floor contains terminals with sufficient connections to supply that floor.

Over 370,000 feet, or 70 miles, of single wire were placed by the telephone company in installing the several hundred telephones which serve the hotel. All wires converge at the hotel switchboard, from which 35 central office trunk lines lead to the Davenport central office.

There are, in all, four public telephone stations on the main floor of the hotel. Each is enclosed in a folding door booth, built of Philippine mahogany, with marble baseboards. One booth in the basement contains a public telephone for the use of the hostelry's garage.

Pennsylvania Bell Motor Drivers Praised for Safe Driving.

More than two-thirds of the fleet of 1,050 motor vehicles that are operated by the Bell Telephone Co. of Pennsylvania throughout the state have carried "no accident" tags for the year 1927. Of the remainder, a large portion were not eligible for the badges because they were not in operation during the entire calendar year.

Most of the vehicles eligible to display the tag have won this honor continuously during the preceding three years, for telephone motor vehicle accidents that have resulted in serious injury are practically nonexistent.

In a recent talk to a group of telephone motor drivers, the head of the Pennsylvania State Highway Patrol, in connection with his remarks on the new motor vehicle code, stated that the telephone company's drivers were giving the fullest cooperation to the safety efforts of the state and that he considered them, as a group, to be exceptionally safe operators.

Before an employe of the Pennsylvania Bell company is permitted to drive, he undergoes a thorough course of instruction in motor vehicle operation. Subsequently, frequent and regular road inspections are made of each vehicle by a corps of expert inspectors, a part of the inspection including the manner in which the vehicle is handled by the operator.

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Power Plant of Telephone Exchange

Description of What Is Necessary in Telephone Power Plants of Manual Exchanges—Must Have Instruments to Indicate That Various Kinds of Current Are Being Delivered at Proper Pressure and Frequencies—Trickle Charging

By Ray Blain

The power plant of a modern telephone exchange consists of the necessary machines and switching apparatus with instruments to indicate that the various kinds of current are being delivered at the proper pressure and frequencies.

Sources of both alternating and direct current must be available at all times for the operation of the telephone apparatus. Direct current is required for the operation of the transmitters, relays, signals, to light lamps, and it performs many other minor duties of the system. Alternating, or pulsating direct current, must be supplied to ring the bells in the subscribers' stations and sometimes to furnish busy-back or other special signals to the subscribers.

The power switchboard in the modern telephone exchange is invariably constructed from a good grade of slate. It was formerly the practice to construct such panels from white Italian marble; this practice, however, has been discontinued due to marble in many cases having metallic streaks or veins, that caused troublesome leaks between circuits, which were difficult to locate. The slate in addition to being superior electrically, has a better appearance than the marble.

On the switchboards are mounted the different instruments for operating and controlling the various battery charge and discharge circuits; also for controlling ringing machines and sometimes signal and alarm circuits.

One or more voltmeters are always installed, and at least one ammeter. The best practice in installing the latter is to have a shunt installed in the charging circuit and one of the same value in the discharge circuit. Then, with the proper switching arrangement, the ammeter can be connected across either shunt at any time to indicate the discharge or charge load. The ammeter should have a scale high enough to record the maximum load required on the system. Care should be taken to make sure that the shunts used are of the proper value for the meter used. Otherwise the readings will be of no value.

If a motor-generator set is used, the field rheostat is usually mounted on the power switchboard.

It was formerly considered necessary to have two charging equipments installed for all telephone systems. One of these charging sets was operated from the commercial power, and the other from a gas or gasoline engine owned by the telephone company. This practice is still followed in the larger exchanges, but on the average small, or even medium sized, system the battery usually has a reserve capacity adequate to carry the load over the average power failure. The commercial power supply is much more reliable than it was a few years ago and in case of failure now, service is usually restored within a few hours at the most.

Two power ringing machines are usually provided, one of which receives its operating current from the commercial power supply, and the other from the storage batteries. Interrupters are commonly used in the smaller exchanges, and motor-generator type of ringers on the large systems.

It was formerly considered good practice to install two sets of storage batteries, one to be on charge while the other was on discharge. This arrangement was at that time necessary, due to the noise caused by the generators in the talking circuits while charging.

With improvements in charging apparatus which permits charging the same battery that is supplying current to the talking circuits without noticeable interference, two batteries are no longer necessary. In addition to the improvement in design of the charging apparatus, to prevent noise it is necessary to keep the charging circuit separate from the discharge leads all of the way to the terminals of the battery. If it is necessary to common a part of these two circuits, their resistance should be kept as low as possible.

All charging machines should be of a capacity large enough to provide current for the ultimate number of subscribers that the exchange will ever be called upon to serve. Ringing machines of a size suitable

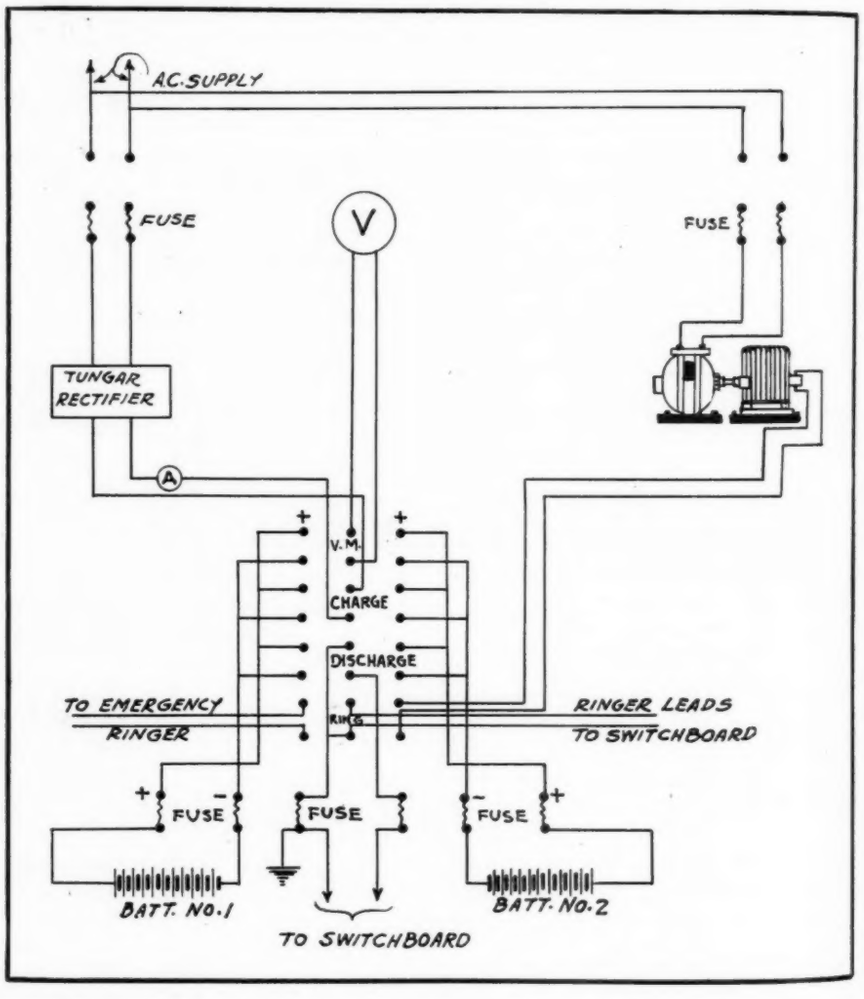
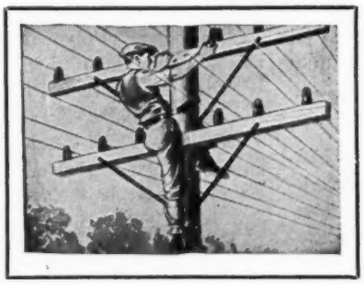


Diagram Showing Various Parts of Power Plant of Telephone Exchange.



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THE ASSOCIATED TELEPHONE AND TELEGRAPH COMPANY, which is owned by British and American Interests, undertakes outside of United States of America:

1. Engineering, Construction, Management and Operation of complete Telephone Installations.
2. The Examination, Negotiation and Acquisition of Telephone Concessions.
3. Financing Telephone Operating Properties, or Extensions to Existing Plant.

THE ASSOCIATED TELEPHONE AND TELEGRAPH COMPANY and its Allied Companies own and manage directly or indirectly upwards of 300,000 Telephones, and are connected with important British and other Manufacturing and Financial Interests throughout the World.

Bankers in London
Westminster Bank Limited

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Commerce Trust Company, Kansas City, U. S. A.
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London Consulting Engineers: W. W. Cook & Partners
Winchester House, Old Broad Street, London, E.C. 2

London Financial Agents: Theodore Gary and Company, London
Stafford House, Norfolk Street, Strand, London, W.C. 2

to take care of the ultimate capacity of the exchange, should also be installed. The leads between the power equipment and the switchboard should be of a size large enough to carry current for the ultimate number of subscribers likely to be served on the system. Forecast studies, properly conducted before the installation of new power equipment, will probably mean considerable saving to the company later.

In practically all telephone exchanges it is necessary to convert the commercial power into a special, low voltage, direct current for the charging of storage batteries. A number of different devices can be used for this purpose, the most common of which are the motor-generator, mercury arc rectifier and direct current mains.

Tungar rectifiers are also used to some extent but, due to their interrupted direct current output, they cause considerable noise in the talking circuits, which makes the installation of two batteries necessary when this type of charging is used. Small trickle chargers are lately coming into common use on small telephone systems and seem to be giving very good service in their limited field.

The motor-generator set consists of a motor adapted to the voltage and kind of current available on the commercial power mains. The generator is designed to supply current of the kind and voltage required for the charging of the storage battery or ringing of the subscribers' bells.

Generators used for charging telephone storage batteries should be capable of developing a voltage which is slightly higher than the voltage of the battery at its maximum charge. For this reason a 30-volt generator is generally used for charging an 11-cell battery and a 60 or 65-volt machine for charging a 25-cell battery. Circuit breakers with both overload and underload ratings are usually installed to insure protection to the equipment.

The generators designed for telephone purposes provide a smoothness of current not attained by the average generator used for ordinary purposes. This is accomplished by increasing the usual number of armature coils and commutator segments. These machines, while producing almost a straight-line current, are not absolutely noiseless. However, when using a battery being charged from one of these generators, no noise can be heard in the talking circuits due to the battery acting as a noise killer.

Even though it were possible for a machine to produce a current that was absolutely noiseless, a storage battery would still be necessary to supply electrical energy to the telephone apparatus during power failures. Generators, running continuous, are used to a great extent to supply current for telegraph purposes. On these systems it is usually necessary to have a battery, or a battery-operated generator, to provide a suitable current to the system during power failures.

Due to the internal resistance of telephone storage batteries being comparatively small, considerable fluctuations may exist in the charging current without being heard over the talking circuits of the system. If there is a bothersome noise in the talking circuits, it can usually be reduced to a value so low that it will not be bothersome, by the installation of large impedance coils in the charging circuit.

Charging generators are controlled in their output by the insertion of varying resistances in series with their fields. Both shunt and compound-wound generators are used for telephone work. The shunt-wound machine is better adapted and more generally used for telephone systems. This type of generator may be wound for a constant voltage from no load to full load, which is usually an advantage for telephone work. It may also be wound overcompounded, so that it will increase its voltage as the load increases.

Care should always be taken to see that generators and motors are mounted on a solid pier and free from vibration if possible. Concrete piers imbedded in the basement floor usually make the ideal installation.

The mercury arc rectifier, due to its efficiency, ease of operation and reliability, probably is the most desirable means of converting alternating to direct current for telephone purposes. Mercury arc rectifiers are usually installed in exchanges where the ultimate charging rate will never exceed 50 amperes. Two mercury arc rectifiers can be operated in multiple to supply 100 amperes, but it is not the usual practice. Usually, when a rate higher than the output of one rectifier is required, a motor-generator set is installed.

The output of these rectifiers is so smooth that it is almost impossible to notice any noise from them on the talking circuits of the system. The mercury arc rectifier has for years been confined principally to telephone use.

Due to recent developments and improvements in this method of power conversion, with an increase in the output on the advent of the steel enclosed arc, which has glass-sealed terminals, they are gradually replacing the rotary converters on large power systems in many fields.

It seems certain that these improvements will develop a suitable rectifier for use on the larger telephone systems which will replace present motor-generator sets on such systems. Polyphase rectifiers of the new type attain a high rate of efficiency with the same ease and reliability of operation as the smaller type sets.

In some special cases where alternating current is not available, or for some other reason, it may be desirable to charge storage batteries from direct current power mains without any voltage changing devices in circuit. With an arrangement of this kind, resistances only are connected in circuit to limit the current flow to the required amount for charging the battery.

Ordinarily, commercial current is supplied at a pressure of 110 or 220 volts, while the storage battery is usually 24 or 48 volts. Therefore, to charge a 24-volt storage battery from a 110-volt direct current circuit will entail a loss of approximately 50 per cent. Charging from direct current mains is more adaptable to use in the smaller exchanges, where the charging rate will not exceed 10 or 12 amperes. This system of charging is not recommended as it is not without its element of danger, for many conditions may arise that can cause serious damage to the equipment of the system.

The tungar rectifier is a very simple though reliable device for charging storage batteries at a rate from six to ten amperes. It consists of a hot argon low-pressure, gas-filled tube, a tungsten filament cathode and a cold anode; a transformer for exciting the filament and reducing the voltage to the required pressure for charging the battery, and a rheostate for regulating the charging current.

The one-tube tungar rectifier operates only on one-half of the wave, and for this reason is considered by some to be only 50 per cent efficient. This is an error, for when they are loaded to the limit of the secondary voltage, they attain an efficiency as high as 75 per cent. This can be explained by the fact that current is drawn from the line only on one-half of the wave. On the other half of the cycle no current is drawn with the exception of the small amount necessary to keep the filament ignited. Two-tube rectifiers, one tube operating in each half cycle, are also available and are more efficient than the single-tube outfits.

The chief objection to this type of rectification for telephone systems is that, due to their unsteady output, they cause considerable noise in the talking circuits. Due to this defect, it is impossible to charge a battery while it is connected to the system and makes a two-battery installation necessary. However, because of the simplicity of the rectifier and the ease of their operation and maintenance, there are some small systems where the installation of two batteries to permit of their use seems to be justified.

The Steady, Settled Job.

Young person, do not be disturbed because you cannot see very far ahead. Frequently young married persons say they want to get settled. The man seeks a job that permits him to be at home.

There is one steady, settled job in every sizable business; the man can always know what he is expected to do and it's a settled job—he is the janitor. The better the job the more activity.—Excerpts from the Memorandum Book of Theodore Gary.

On one such exchange a 70 ampere-hour battery was considered necessary. To permit the use of tungar rectifiers, two 35 ampere-hour batteries were installed. Arrangements were made so that both batteries could be connected parallel, in case of an emergency such as a prolonged power failure. The circuit arrangement of an installation of this type is shown in the accompanying drawing.

On this system a neat and inexpensive power panel was constructed from a piece of Bakelite 28 ins. by 45 ins. by 5/16 ins. thick. Holes were cut in the center of the panel near the top for the ammeter and rheostat handle of the rectifier, which was mounted directly behind the Bakelite panel by use of angle iron braces. The necessary switches and fuses were then mounted lower on the same panel, which made a very compact and neat arrangement.

A special tungar rectifier with two tubes and a 30-volt output without a rheostat control is now on the market. The current output is adjusted by a slide-wire arrangement and clamp inside the case. This machine is especially designed for telephone purposes and is very efficient, but due to the noise that it causes on the talking circuits is not suitable for use in a one-battery exchange.

The interrupted direct current output of the tungar rectifier is considered by some to be an advantage for charging a sulphated storage battery, for it is supposed to remove the sulphate more quickly than will the smooth, direct current from the regular charging equipment.

Trickle charging has been in use for several years on various railroad signal systems where it has been known as the "floating battery" system. It was just recently that this system of charging has been applied to small telephone systems.

"Trickle charge" is the term applied to the arrangement of connecting a battery on a permanent or continuous charge from a charger connected to the alternating current mains. The charger being always connected, automatically replaces any current used from the battery and keeps it fully charged at all times. These rectifiers can be set to any charging rate up to about three-quarters of an ampere. Some deliver a taper charge so that it automatically increases the charging rate as the battery voltage fails. Due to the low charging rate, no interference is caused on the talking circuits of a properly-designed telephone system.

The reason for this system of maintaining small battery installations becoming popular is likely due to the recent information made available by storage battery companies, that if a battery is kept fully charged at all times it will have a longer life than one maintained by the old methods. It was formerly considered necessary that a battery receive its charge and discharge in regular cycles to insure maximum life.

The trickle charger can be used to good advantage on small isolated P. B. X. systems, where the average discharge rate over 24 hours is less than three-quarters of an ampere. On a system of this kind it is found that the trickle charger will keep the P. B. X. battery in much better condition than the usual system of floating from the main exchange over several cable pairs. A good practice on an exchange of this type is to install a portable battery of the automobile type so that should trouble or an unusual condition cause a rapid discharge of the battery, it can be replaced by one fully charged and kept on hand for that purpose.

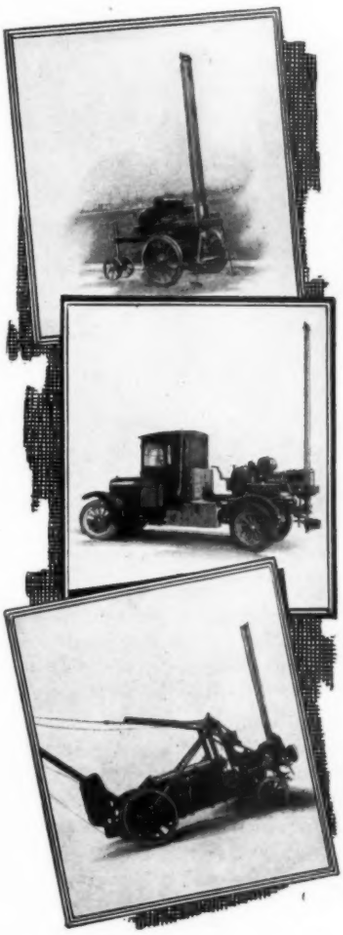
The saving in cable pairs in the average exchange is a big argument for this method of maintaining a P. B. X. battery.

On some installations, the battery has a glass tube with floating balls in view of the operator which indicates that the gravity is up. When the balls sink to the bottom of the tube, the operator notifies the wire chief that the battery requires attention.

The electrolytic or chemical rectifier is probably the most commonly used for trickle charging. This type charger was first developed for radio batteries and just recently applied to telephone systems. These rectifier units are connected in the

The Buda-Hubron Earth Drill

---trailer, truck or tractor mounted



Trailer Mounted Buda-Hubron

Buda-Hubron Mounted on Auto Truck

Buda-Hubron Fordson Tractor Mounted

For every kind of pole hole job—cross country or highway work, hill country or swamp—there is a Buda-Hubron mounting.

Trailer mounted — light, portable and especially easy to handle for city or cross-country work. Tractor mounted—on Fordson with winch and derrick for highway and heavy cross country going. Or the Buda-Hubron can be purchased ready for mounting on your own automobile truck.

Whatever the mounting—Buda-Hubron digs pole holes quickly, efficiently and with a marked saving in time and labor. Earth, clay, hardpan, gravel or frozen earth are handled without difficulty.

Write for facts and figures on Buda-Hubron performance.

THE BUDA COMPANY

HARVEY, (Chicago Suburb) ILLINOIS

BUDA—HUBRON BUDA ESTABLISHED 1881 **EARTH DRILL**

transformer circuits very similar to the tungar tube in the tungar rectifier circuit. The valve action of the chemical unit permits current to flow in one direction only at a low rate.

A new rectifier has recently been developed which utilizes a partially oxidized disk of copper as a rectifier unit. These rectifiers having a dry unit require very little attention if installed where proper ventilation will insure their cooling properly. They, no doubt, will be very desirable for trickle charge of small telephone batteries.

Power systems for automatic exchanges are very similar to those for manual exchanges, with the exception of counter E. M. F. or end cells to maintain the voltage of the battery between 46 and 52 volts at all times.

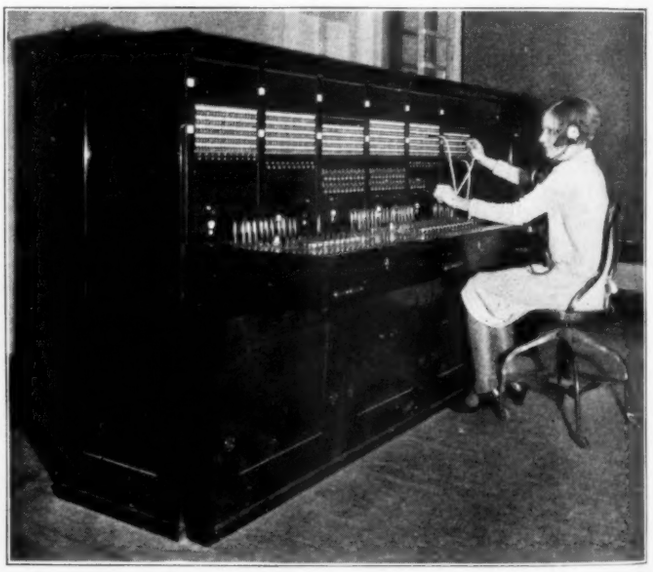
Prices in the Metal Markets.

New York, May 7—Copper—Firm; electrolytic spot and future, 14¼c. Iron—Quiet; No. 2 f. o. b. eastern Pennsylvania, $20; No. 2 f. o. b. Buffalo, $16.00@17.00; No. 2 f. o. b. Alabama, $16.

The Modernizing of Small Exchange

New Junior Unit Type Convertible Switchboard Installed at Cambridge, Ill., as Best Designed to Meet the Needs of Ever-Increasing Demands of That Community—Single Operator Position Sections—Universal Cord Circuit

For the past several years the management of the Citizens Mutual Telephone Co., Cambridge, Ill., was aware of the fact that their old board would soon have to be discarded. It was inadequate to meet the ever-increasing demands, since every available line was in service.



The Exchange at Cambridge, Ill., is Located on the Second Floor in the Rear of the Bank Building.—The New Junior Unit Type Convertible Switchboard of the Citizens' Mutual Telephone Co.

Determined that their next switchboard should have ample facilities for expansion, the Cambridge company's officials began to look around for a switchboard that offered what they considered the best features for the successful operation and future growth of their exchange. Their selection was the junior unit-type convertible switchboard, a new board recently designed and built by American Electric Co., Inc.

Cambridge, a city of 1,500 population, is located about 30 miles southeast of Rock Island, Ill., in one of the richest agricultural districts of the state. The residents of this prosperous city will, in the future, be able to boast of their telephone service for, while most of the lines are now local battery, the management is converting them to common battery as rapidly as possible.

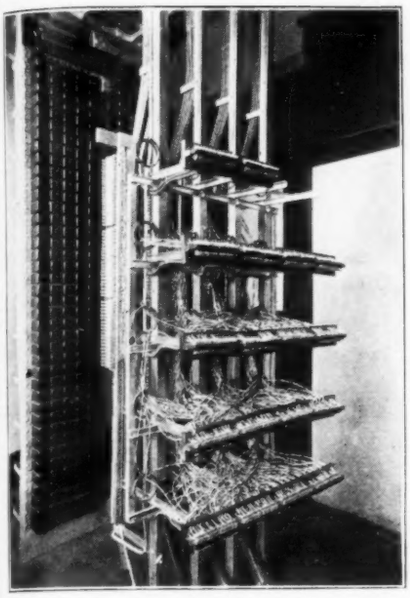
This junior unit-type convertible switchboard is similar to American Electric unitboard. Probably the most noticeable difference between these two types of switchboards is the difference in the height, the junior board being 20⅞ inches lower than the larger board. The same service and operation, however, can be had with the junior board as with the larger board.

The junior switchboard installed at Cambridge is equipped with three operator positions, an additional calculagraph section, 45 rural and toll lines, 280 local convertible lines and 40 universal cord circuits. Additional equipment installed in the exchange included a power plant, relay rack and the ringing equipment.

Like the large unit type switchboard, this junior board is constructed of unit-type, single-operator position sections. These sections are so designed that when placed in position the entire switchboard has the appearance of one continuous cabinet. It is so arranged that additional sections may be added by removing the end panel and adding the required sections.

The cord circuit used in this new type board is full universal automatic changing type arranged for connecting magneto lines to magneto lines, magneto lines to common battery lines, common battery lines to magneto lines, and common battery to common battery lines, without discrimination on the part of the operator. In the junior board only 15 cord circuits are provided for each position, whereas in the larger unit type board provision is made for 17 cord circuits. This universal circuit is arranged for ringing all common battery lines automatically and all magneto lines manually. In addition to this feature, the following features are included in the universal cord circuit of the Cambridge board. Revertive ringing tone to the calling subscriber, dark keyshelf on completed connections, instantaneous ringing cut-off, and audible busy test.

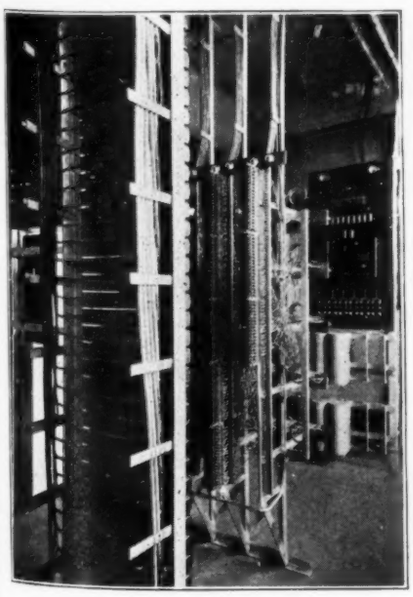
An angle iron relay rack, constructed in bays, is provided and arranged so that additional line and cut-off relays can be added as required.



Close-up View of the Main Distributing Frame of the Citizens Mutual Company at Cambridge, Ill.

Power is furnished for this junior unit-type convertible switchboard by an American automatic power plant supplying 24 volts. The power plant is of the float-load type, requiring no one in attendance to maintain the voltage between the proper operating limits. This type of power equipment provides the most efficient and reliable method of current supply since the batteries are kept in a charged condition at all times.

The power panel is constructed of angle iron framework with slate panels for mounting the rectifiers, switches and meters. The ringing interrupters are arranged with jacks in order to permit removal of the unit for inspection or repair.



Relay, Lightning Arrester and Main Distributing Frame of the Citizens Mutual Telephone Co., Cambridge, Ill. The Power Board Can Be Seen in the Background.

New Patented Telephone Necessity

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Telefo-Safety Holder shown above in the cut solves the problem of where to put the telephone or electric fan. Two years ago, Telefo-Safety was unknown, unheard of, unused, and untried. Today it is rendering a national service to millions thruout the entire nation, in banks, hotels, offices, homes, stores, restaurants, laundries, bakeries, beauty shops, and all places with a phone or electric fan.

It is finished up in the Dark Rubber—$1.00—Copper Oxidize—$1.25—Mahogany—$1.50—Ivory—$1.75—Walnut—$1.50—Alligator—$1.50—and various other finishes. It is in the field without a competitor. It **SATISFIES** and **SAFETY-FIES** 200% and then some. Attractive discounts to dealers, jobbers, and distributors. Agents wanted in all cities and towns in the U. S. A. Samples mailed on receipt of price.

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The good will of your subscribers is worth money to you—but money won't **buy** it. Here, however, is a way in which you can get that valuable good will FREE:

Sell your Preferred stock to your subscribers. Make them **partners** in your company. Pay them dividends for **their share** of your earnings. Give them a definite **personal interest** in the progress and prosperity of your company.

Can you think of any surer way to gain the fullest measure of the good will, friendship and co-operation of your subscribers? Would not the ownership of your Preferred stock by your subscribers give you a pleasant freedom from unfounded complaints and unjust criticisms—would it not give you the strongest kind of protection against hostile legislation and unfair treatment in rate cases?

Would you not like to know more about Customer Ownership and how you may obtain its benefits for **your** company?

We have a booklet which tells in some detail just what Customer Ownership will do for you—and just what **we** can do to help you secure Customer Ownership. We shall be glad, upon request, to send you a copy.

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What the Commissions Are Doing

Up-to-the-Minute News Regarding the Activities of State and Interstate Commissions, Courts and City Councils in Matters Concerning Telephone Companies—Summary of Commission Orders and Schedule of Telephone Hearings

Commission's Accountants Find Company Made High Earnings.

The need of an investigation into the telephone rates in Kansas and possibly a marked revision downward in the charges was disclosed to the Kansas Public Service Commission on May 3.

Accountants for the commission completed the checking of the annual report of the Emporia Telephone Co. and some other companies in cities of similar size. They found the Emporia company earned 23 per cent on the capital investment and "hid" an additional $16,000 in tax reserves in order to prevent a showing that the company earned 30 per cent on its common stock last year.

This earning was accomplished with the lowest telephone rate system of any telephone exchange of a city of similar size in Kansas. The Emporia company has built up a depreciation reserve almost sufficient to rebuild the plant and has a surplus of $106,920, and set aside $16,368 last year as a tax reserve. The Emporia plant is owned by the Southwestern Bell and Warren W. Finney, with Mr. Finney as manager. Mr. Finney owns several small Independent telephone exchanges in the state.

Emporia has about reached the "saturation point" in telephones, as it has 4,288 separate stations with a population of 13,000. The following shows the telephone rates for cities of approximately similar size in the state:

	Individual business	Individual residence
Emporia	$3.75	$2.00
Lawrence	4.50	2.50
Manhattan	4.50	2.75
Salina	3.50	2.25
Leavenworth	4.00	2.25
Atchison	4.00	2.00
Ottawa	3.25	2.00
Parsons	3.50	2.00

If the rates of either Manhattan or Lawrence were applied to Emporia, it would increase the earnings of the Emporia plant approximately 9 per cent on the capital stock.

The commission's accountants found that if the average rates of the Southwestern Bell system in Kansas were applied to Emporia, it would show an increase of 10 per cent in earnings for the Emporia plant.

Reorganization of Company No Basis for Rate Increase.

Taking the position that the mere reorganization of the management of a utility is no excuse for placing rate increases on patrons, the Indiana Public Service Commission recently refused to permit the newly-formed Northern Indiana Telephone Co., of North Manchester, to file and place in effect an increased schedule of rates without first petitioning the commission in a formal manner.

The company is the successor of the A. & M. Telephone Co., and as a result of the change in management the center of operations was transferred from Laketon to North Manchester.

Recently the new company filed a schedule of increased rates with the commission's tariff department for approval. Members of the commission questioned the right of the company to obtain the increases in this manner, and suggested to Carl H. Mote, Indianapolis attorney, who is interested in the company, that a rate increase petition should be filed.

The company retaliated with the assertion that the utility is a new enterprise, and that under the law it may file new rate schedules at will. The final view of the commission was that the new company in acquiring the existing properties took over the rates as well as the property, and that it is not a new utility in reality, and therefore obliged to petition for increases.

Complaint against the new rates was placed before the commission by a business telephone subscriber who said that the old rate of $1.50 a month, with a 15-cent penalty, would be increased to $4 a month, together with a 25-cent penalty and $1 a month extra mileage charge, because of the transfer of the main office from Laketon to North Manchester.

Properties involved in the case are at Disko, Laketon, Akron, Urbana, Silver Lake and North Manchester.

Northwestern Bell Obtaining Testimony in Event of Suit.

Anticipating litigation that may be brought by the city, county or state, relative to the necessity of the Northwestern Bell Telephone Co. operating under a franchise in Davenport and other Iowa cities, the company has filed an application in the Scott county district court to perpetuate testimony of Davenport residents concerning the length of time the utility has operated there.

Testimony will be taken under the application granted by Judge C. L. Ely, May 22, at the law office of Cook & Balluff, Davenport attorneys for the telephone company. The testimony will be given by August A. Balluff, Elena A. Hout, H. E. Downer and E. T. Parmele of Davenport and Charles E. Hall of Omaha.

Interrogatories to be presented those giving testimony deal principally with the length of time the Northwestern Bell Telephone Co. served the city of Davenport prior and since October 1, 1897.

According to the application, the telephone company expects to be defendant in an action brought either by the city, the county attorney or the attorney general of Iowa in which the length of time the utility has served residents is to be a principal issue.

Davenport attorneys for the telephone company state that the expected litigation included several Iowa cities including Davenport where dispute might arise as to the necessity of franchises.

Any of the several thousand persons may institute the suits according to the application to the court. The testimony sought to be perpetuated would be very material in event of litigation, it is alleged.

Increased Rates Enable Company to Resume Operations.

Disabled by a sleet storm that swept northern Indiana early in April, the Liberty Center Telephone Co. plans to resume operation under provisions of an order passed by the Indiana Public Service Commission increasing the rates and ordering a depreciation fund built up at the rate of $20 a month.

New rates will be $2 for single business line, $1.75 for party business; single residence, $1.75; party residence, $1.50.

Scotia Telephone Co., Mo., Authorized to Make Purchase.

The Missouri Public Service Commission recently authorized the Scotia Telephone Co. to purchase certain telephone lines and equipment owned by P. K. Higgins for $4,000.

The property is located at Broseley and Qulin and a toll line on the right of way of the Butler County Railroad Co. between Linstead and the Arkansas state line, and the toll line extending from Broseley to Qulin, together with all franchise rights and contracts in connection with the operation of the plant.

Exchange Rundown; New Owner Asks Increase to Rehabilitate.

Roy B. Rohrbacker has purchased the property of the Madrid & Elsie Telephone Co. ,and has applied to the Nebraska State Railway Commission for authority to increase rates, which he finds are not uniform and below the level of a reasonable rate return. The company has exchanges

at the two towns named, and the property was allowed by former owners to run down so that service complaints were numerous. Mr. Rohrbacker is an experienced telephone man, and plans to put the property in service condition.

He desires an increase in business rates from $2.00 to $2.50 per month and residence from $1.50 to $1.75, with farm lines at $1 and extension telephones 50 cents, and $1 for residence and business respectively. Mr. Rohrbacker also asks for authority to put in a 10-cent message charge between Madrid and Grant, the county seat. A farm line is now used as a toll line, and Grant gets the switching fee, with Madrid getting nothing.

The new owner says he plans a complete rebuilding of lines, and proposes to connect Elsie with Wallace, for which he wants permission to charge a 10-cent toll. He has talked with his subscribers, and they are willing to pay more for better service than at present given.

Present Rates Yield 3½ Per Cent; Increase Asked.

The Madison Telephone Co. has applied to the Nebraska State Railway Commission for authority to increase its rates, setting up that the present schedule is confiscatory and does not represent an adequate return on the investment.

The company recently completed an extensive rebuilding program, which included reconstruction of outside lines and the erection of a new building to house the improved equipment. The book cost of the property is $88,841, and the fixed assets are $93,222, which is less than their fair value. The present schedule is earning $20,093 revenues but the expense is $17,827, the net of $3,266 being but 3.5 per cent on the investment.

The rates asked for will yield a net income of $5,773.09, or about 6.18 per cent return on the investment, which is no more than is reasonable. The proposed rates, it says, are not in excess of the charges for service in other cities of like size, while the present rates are lower than in practically all of them.

The company desires to increase one-party business from $2.25 to $3.50 per month; business, extension, from 45 cents to $1.00; one-party residence, from $1.35 to $1.75; residence extensions from 45 cents to 50 cents; farm, metallic, business, from $1.35 to $2.25; farm, metallic, residence, from $1.35 to $1.75, and farm residence, grounded, from $1.35 to $1.50. The company proposes to cut from 50 cents to 25 cents a month the extra charge for the use of the hand-set type telephone.

Mutual Exempt from Commission's Accounting Provisions.

The Nebraska Supreme Court has denied the application of the Nebraska State Railway Commission for an order on the

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Manufacturers of

Telephone and Switchboard Cords

Central Office Operators Cords

Radio and Wireless Cords

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Flame Proof Jumper Wire

***CABLES*—Silk and Cotton Insulated —Both Braided and Lead Covered Types**

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GEE VEE ELECTRICAL FITTINGS

The Gee Vee Pipe Cap, Type F

For use on the end of conduit containing lead covered or signal wires. Plenty of room for the wires; furnishes good ventilation. Galvanized, and has brass screws. Can be applied after the wires are drawn in and connected up. Pipe does not have to be threaded. Made in sizes from ½" to 6".
Also made in the B style for horizontal services.

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UNIQUE { FURNACE, SOLDER POT, LADLE, WIND-SHIELD

Write for New Literature

UNIQUE MANUFACTURING CO., INC.
221 W. Whiting St., CHICAGO, ILL.

Farmers' Mutual Telephone Co., of Cotesfield, requiring it to place in effect the uniform system of accounts that the law enables the commission to require and gives it power to compel compliance.

The district court of Howard county held that the fact did not establish that the company was a common carrier for hire, and that, under the decisions of the supreme court, a company created and operated for the purpose of giving service only to stockholders and upon the assessment plan, was not under commission control. It could, therefore, utilize its own methods of bookkeeping since they were not subject to review and were not available for use in fixing rates since it had none.

The action of the Supreme Court was taken, without writing an opinion, and is in effect a holding that the district court erred in no respect as to the law or its application to the existing circumstances. The commission insisted that the evidence showed that the company did switching for the Danviske and Fish Creek valley farm lines, and that it interchanged toll messages with the Bell, and that this made it a carrier for hire.

The supreme court says not, and supports the lower court finding that these did not constitute it a common carrier for hire and, therefore, subject to commission control. The company explained that while it handled toll messages, these were not a source of revenue to the company, since the operators were given the commissions for their services, and denied that it was a subterfuge since wages were not based on toll earnings being included.

Holds Hearing on Withdrawal of Summer Night Rates.

The New York Public Service Commission has suspended until September 10, unless otherwise ordered, a tariff schedule filed by the New York Telephone Co., proposed as effective on May 14, which would eliminate between May 25 and September 10 of each year reduced rates for night telephone messages, in either direction, between certain summer resorts in Saratoga, Schoharie, Delaware, Ulster, Green, Sullivan and Dutchess counties and all telephone exchanges in Greater New York.

Under the present schedule in force, there is a reduction of 50 per cent over the day station-to-station rates, in either direction, between the communities in the seven New York upstate counties and Greater New York between 8:30 p. m. and midnight, and 75 per cent reduction when a call is put through between midnight and 4:30 a. m.

The schedules which have been suspended propose to eliminate, in both directions, the night reduced rates between all Greater New York exchanges and the following summer resort sections: Saratoga Springs, in Saratoga county; Sharon Springs in Schoharie county; Fleischmanns in Delaware county; Pine Hill, Phoenicia, Kerhonksen and Ellenville in Ulster county; Windham, Cairo, Catskill, Jewett, Hunter and Tannersville in Greene county; Roscoe, Livingston Manor, Liberty, Hurleyville, Woodridge, Lake Huntington, North White Lake, Monticello, South Fallsburgh, Bloomingburgh and Wurtsboro in Sullivan county; and Hopewell Junction in Dutchess county.

The commission, on its own motion, held a hearing on May 10 for the submission of evidence concerning the lawfulness of the proposed withdrawal of the night telephone charges, the rights and interests of the public appearing to be injured by the change proposed by the telephone company. The company is directed to make no change in its tariffs during the suspension period.

Increase Granted on Receipt of Subscribers' Petition.

The application of the Southwestern Bell Telephone Co. to increase its exchange rates at Idabel has been granted by the Oklahoma Corporation Commission. The increase was granted upon receipt of petition of 188 subscribers of the exchange, and of resolutions passed by the city council, asking that the company be granted the higher rate upon the installation of a common battery system to replace the magneto type.

The present rates are: $2.50 per month for one-party business; $1.50 per month for one-party residence; $1.00 per month for business extension; 50 cents per month for residence extension and 25 cents additional for desk set. This rate, the company contended, has caused the company to operate at a loss at Idabel for several years.

The commission granted the following new schedule of rates to be effective 30 days after the company has notified the city council of completion of the common battery system: $3.50 per month for individual line business telephones, either wall or desk; $2.00 per month individual line residence, either wall or desk; $1.75 per month for two-party residence, either wall or desk; $1.00 per month for business extension telephones; 50 cents per month for residence extension telephones.

Increased Rates of Ohio Central Company Filed.

The Ohio Central Telephone Corp., of which B. A. Ogden is general manager, has filed a revised schedule of rates with the Ohio Utilities Commission to become effective June 1, 1928, covering telephone service in Mt. Gilead, Caledonia, New Winchester, Sparta, Chesterville, Iberia, Johnsville, Cardington, Marengo, Beach City and Martel exchanges.

Rates for the Mt. Gilead exchange provide for $3.50 monthly for individual business lines; $3.00 monthly for four-party business lines; $3.00 monthly for individual residence lines; $2.25 monthly for four-party residence lines; $3.00 for rural multi-party business lines, common battery; $2.50 for rural multi-party business lines, magneto; $2.25 for rural residence multi-party lines, common battery; $2.50 for rural residence multi-party lines, magneto; $5.00 for one-position switchboards; $3.00 for cordless switchboards and $1.50 for intercommunicating stations.

Rates for the remainder of the town served by the company are: $3.00 for individual business lines; $2.50 for four-party business lines; $2.50 for individual residence lines; $2.00 for four-party residence lines; $2.50 for multi-party business rural lines and $2.00 for multi-party residence rural lines.

Cincinnati Bell Authorized to Sell Shares of Stock.

The Ohio Public Utilities Commission has authorized the Cincinnati & Suburban Bell Telephone Co., to sell at par, 35,542 shares of common stock of the company for the purpose of financing extensions and betterments to the extent of $1,777,107.

This action, coupled with the authorization on April 27 to sell 129,673 shares of common stock at $50 per share for reimbursement of the company's treasury for work already done and the issuance of $2,577,500 more stock for work under way, brings the total authorized sales of stock to 200,000 shares at a par value of $10,000,000.

Telechronometer Company Without Standing Before Commission.

The ruling of Attorney General Dunbar of the state of Washington that the American Telechronometer Co., which is seeking to place meters on telephones of Washington, and is not a public service corporation and is without standing before the Washington Department of Public Works, will not affect pending applications for hearings, but has already severed the company's direct relations with the department.

The department of public works, a recent report states, can not fix a date for the hearing for two or three months. Consequently, the chances are that the meter case will be on the shelf until fall.

Upon being advised that the telechronometer company was not a public service utility, the department returned annual reports, tariffs and the filing fee of the company. Thus the department withdrew its recognition of the company.

Southwestern Bell Acquires Two Texas Telephone Properties.

Authority was granted by the Interstate Commerce Commission recently for the acquisition of the Pecos & Rio Grande Telephone Co., Fort Stockton, Texas, and Alderman Telephone Co., Midland, Texas, by the Southwestern Bell Telephone Co.

The price of $85,250 will be paid for the Pecos & Rio Grande Telephone Co., and $88,100 for the property of the Alderman

Telephone Co., together with the assumption of certain liabilities of both companies.

The Pecos & Rio Grande company, with headquarters at Fort Stockton, operates exchanges at Fort Stockton, Marfa, Fort Davis, Rankin, Buena Vista, Grand Falls, McKamey and Presidio, serves 1,141 subscribers and has 350 miles of toll lines.

The Alderman Telephone Co., with headquarters at Midland, operates exchanges at Midland and Odessa with 846 subscribers and 84 miles of toll lines. The Bell's lines now connect with those of the two companies.

The commission's report points out that large and important oil pools exist in West Texas, and there is a growing demand for better and more extensive outside connection. The Southwestern Bell contemplates enlargement of the facilities and more extensive service in both sections. According to the report the local companies have not been able to keep abreast of the demand for such wire service.

Summary of Commission Rulings and Schedule of Hearings.

INTERSTATE COMMERCE COMMISSION.

April 23: Acquisition by the Southwestern Bell Telephone Co. of the properties of the Pecos & Rio Grande Telephone Co., Fort Stockton, Texas, found to be of advantage to the persons to whom service is to be rendered and in the public interest. Certificate issued.

April 24: Southwestern Bell Telephone Co. authorized to acquire properties of the Alderman Telephone Co., Midland, Texas.

April 25: Northwestern Bell Telephone Co. authorized to acquire properties of Golden Valley Telephone Co., Beach, N. D., and Mountain States Telephone & Telegraph Co. authorized to acquire from the Northwestern Bell company that part of the properties of the Golden Valley Telephone Co., located in Montana.

ILLINOIS.

April 12: Order approved directing that rate schedule Ill. C. C. 3, of the Peoples Telephone Co. of Mercer county applying to telephone service in Aledo, Mercer county and vicinity, filed May 17, 1927, be cancelled and annulled; and permitting the company to file a modified schedule of rates to be designated as Ill. C. C. 4, applying to Aledo and vicinity, effective May 1, 1928, and requiring the company to file the schedule of rates not later than ten days after the date of service of order or effective on any subsequent date, provided the schedule of rates is filed with the Commission not later than ten days prior to the effective date of the schedule, upon conditions set forth in order.

April 12: Order approved suspending until August 25, 1928, proposed advance in rates for service in Pleasant Plains and New Berlin, stated in rate schedule Ill. C. C. 3 of the Boynton Telephone Co.

April 12: Order approved suspending until August 30, 1928, proposed advance in rates for telephone service in Vermont, Fulton county, stated in rate schedule Ill. C. C. 4, of the Vermont Telephone & Exchange Co.

April 12: Order approved extending until October 26, 1928, period of suspension of the proposed rates for telephone service in Cedarville and Lancaster townships stated in rates schedules Ill. C. C. 3, of the Lancaster & Cedarville Telephone Co.

April 12: Order approved extending until October 23, 1928, period of suspension of the proposed rates for telephone service in Pearl City, Lena and McConnell stated in rate schedules Ill. C. C. 3, of the Pearl City Independent Telephone Co.

April 12: Order approved suspending until August 28, 1928, proposed rates for telephone service in Geneseo, stated in rate schedule Ill. C. C. 1, Sheet 1-A of the Geneseo Cooperative Telephone Co.

April 18: Order approved dismissing application of the Illinois Central Telephone Co. for an order authorizing the discontinuance of a toll line between Hopedale and Armington.

April 18: Order approved requiring the Farmers Telephone Co. of Hopedale, within 30 days from date of order, to remove subscribers' instruments from its portion of the toll line between Hopedale and Armington and make such repairs to or replacements of equipment as may be necessary to render efficient service over the line.

April 18: Order approved requiring the Milledgeville Mutual Telephone Co. to refund to all subscribers from which it has collected charges for toll service Milledgeville or Chadwick to Mt. Carroll, Lanark, Brookville and Thomson the amount as charged and collected from July 1, 1927, to date of service of this order and that such refund shall be made within 30 days from date of service of order; authorizing the company to place in effect the schedule of rates designated as toll rate schedule Ill. C. C. 1, applying to Milledgeville and Chadwick, effective May 1, 1928, with the exception that the rule shown on sheet No. 6, which is specifically cancelled and annulled and requiring the company to file a revised sheet No. 6, showing the free toll service points; also permitting amended schedule of rates applying to local ex-

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change service filed November 7, 1927, providing for an increase of $3.00 per annum of local exchange rates and providing for a similar discount for the same amount when bills are paid promptly, effective as of May 1, 1928.

April 18: Order approved authorizing the Illinois Bell Telephone Co. to purchase and the Vermilion County Telephone Co. to sell, all the property and assets of the latter (except its franchise to be a corporation), provided that the amount of the cash settlement to be paid by the purchasing company to the selling company shall not vary to exceed $20,000 more than $641,563.38, which would have been the amount to be paid in cash had the transfer of the property and assets been made as of January 31, 1928; and granting to the purchasing company a certificate of convenience and necessity for the transaction of a public utility business.

April 18: No action taken on Illinois Telephone Co.'s toll rate schedule Ill. C. C. 3, applying to all exchanges and toll stations, effective April 30, 1928; and the C. T. & N. Telephone Co.'s rate schedule supplement No. 1 to Ill. C. C. 1, covering telephone service in Casey, Toledo, Neoga, and vicinity, effective May 11, 1928.

April 19: Order approved suspending until September 6, 1928, proposed rates for telephone service in Geneseo, Henry county, stated in rate schedule Ill. C. C. 1, first revised sheet 1 of the Geneseo Cooperative Telephone Co.

April 19: Order approved suspending until August 31, 1928, proposed rates for telephone service in Grayville, White county, stated in rate schedule Ill. C. C. 1, of the Commercial Telephone Co.

May 8: Hearing at Springfield before Commissioner Johnson in the matter of the proposed advance in rates for service of the Cabery Telephone Co. in Cabery, Ford county, stated in rate schedule Ill. C. C. No. 1 of the company. Set for hearing for the purpose of allowing engineering section to submit report of its investigation.

May 10: Hearing at Springfield in the matter of the application for the approval of purchase by the Western Illinois Telephone Co. and sale by these companies of their telephone properties; the Peoples Telephone Co. of Mercer county; the New Boston Telephone Co., the Little York Telephone Exchange, and the Logan Telephone Co., located in the city of Aledo and vicinity, New Boston, Mercer county, and Little York and vicinity in Warren, Henderson and Mercer counties, and Seton and vicinity in Mercer county, respectively; also for a certificate of convenience and necessity to operate the properties; also for authority to issue 10 shares of its capital stock, $150,000 aggregate amount of first mortgage 6 per cent bonds and $75,000 amount of capital stock.

May 10: Hearing at Springfield in the matter of the joint application for the approval of purchase by the Moweaqua Home Telephone Co. and sale by the Moweaqua Telephone Co. of its property and assets in Moweaqua and vicinity; also for a certificate of convenience and necessity to operate the property and for authority to issue $20,000 of its capital stock.

INDIANA.

April 28: Citizens Independent Telephone Co., Terre Haute, authorized to issue and sell $189,200 of its 7 per cent preferred stock at not less than 97 per cent of its par value.

April 28: Slight increases granted the Mexico Home Telephone Co. and the Citizens Telephone Co. of Frankton.

April 30: Petition filed by the Richmond Home Telephone Co. for a change in rates for hotel private branch exchanges at Richmond, eliminating the sharing of tolls collected from outgoing calls. The company would establish a flat rate of $9 quarterly for the switchboard and $1.80 quarterly for each station, the hotel retaining the 5-cent fees charged for outgoing calls instead of giving half to the telephone company as has been the rule.

April 30: Request denied of the Northern Indiana Telephone Co. to place in effect a higher schedule of rates. A ruling that mere reorganization of management is not sufficient reason for boosting rates was made. The company is successor to the A. & M. Telephone Co. and in changing ownership the center of management was changed from Laketon to North Manchester.

Representatives of the company said the utility is a new enterprise, and, under the law, is entitled to file a new rate schedule. The commission held that, when the Northern Indiana company took over the old company, it acquired the rates then in force as well as the property and in reality is not a new utility.

May 1: Briefs ordered filed following hearing on a petition of the Logansport Telephone Co. Dr. John Bauer, of New York, on the stand for those opposing the rate increase, set the valuation of the property at $516,000. Herbert Hutchinson, commission engineer, said the engineering department of the commission fixed the valuation at $640,000. The company asks rates based on a valuation of $900,000. Patrons of the company are opposing the increase.

KANSAS.

April 19: Complaint filed by Gilbert Padfield against the Spivey Telephone Co., claiming the company has prevented him from obtaining telephone service over the Almeda Telephone Co.'s lines, which, he contends, runs nearer his home and connects with the persons he desires service with.

May 1: Application granted to sell telephone plants and properties at: Pomona, Greeley, Atlanta, Burden, Dexter, Irving, Biglow, Cleburne, Wheaton, Vermillion, Mound City, Devon, Mapleton, to A. T. Roberts. Certificate of convenience and authority to do business issued to latter.

May 2: Permission granted to sell their telephone plants and properties at the following places: Corning, Circleville, Allen and Chalk, Linwood, Strawn, Waverly, Melvern, Olivet, Welda, Kincaid, Lone Elm, Mildred, Moran, LeRoy, Scranton, to A. T. Roberts. Certificate of convenience and authority to do business issued to latter.

May 2: Application of Walnut Telephone Co. of Walnut, to sell to A. T. Roberts, withdrawn by the applicant.

May 3: Application granted of Jas. Thompson for a certificate of convenience and authority to transact the business of a telephone utility at Plains and Kismet.

May 4: H. M. Perkins, a lawyer and real estate man, whose address is given as 715 Minnesota avenue, Kansas City, Kans., filed a complaint in which he alleges the Southwestern Bell Telephone Co. is making excessive charges and is furnishing inadequate or poor service.

He sets out that in 1919 the Southwestern Bell bought out the Home company and since then through legal manipulations, rates have been increased for business telephones to $11 a month and that the present rates are $4 for a one-party residence line and $3.25 for a party line.

He also complains about the practice of the present company of making an installation charge of $2.50 and of making a service charge of $1 when a customer changes his residence and a new connection has to be made.

LOUISIANA.

May 4: Hearing held at Baton Rouge on conversion of Baton Rouge Exchange of Southern Bell Telephone & Telegraph Co. to automatic operation with slight increases in service rates.

May 4: Hearing held at Baton Rouge in matter of citizens of Gonzales vs. Southern Bell Telephone & Telegraph Co. in relation to the construction and operation of a telephone exchange at Gonzales.

MAINE.

April 25: Protest filed by Guy M. Melvin and other citizens of the towns of Deblois and Beddington and subscribers of the Beddington & Deblois & Beddington Telephone Co. against removal of their telephones and requesting an investigation of the matter.

The telephone company is said to be owned by A. L. Stewart's Sons, and notice has been sent to the subscribers that their telephones are to be removed.

The commission has served the owners of the company with a copy of the complaint, accompanied by the customary notice that if the matters complained of are not rectified within ten days, a formal public hearing will be ordered.

MICHIGAN.

May 2: Hearing on application of the Wolverine Home Telephone Co. for permission to purchase property of the Williamston Telephone Co. and to issue 2,990 shares of capital stock at $50 per share.

MINNESOTA.

May 5: Application granted of the International Telephone & Telegraph Co. to purchase certain telephone properties from the Arrowhead Telephone Co.

May 15: Hearing in the matter of the application of the Kenyon Telephone Co. for authority to change its schedule of telephone rates and charges at Kenyon.

May 17: Hearing at Clear Lake in the matter of the application of the Clear Lake Telephone Co. for authority to change its schedule of telephone rates at Clear lake and Clearwater.

MISSOURI.

April 30: Application filed by the Midwest Telephone Co. of Kansas City, which has recently taken over the Butler Telephone Exchange, at Butler, Bates county,

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Western Elec. No. 20 Common Battery Ind. coils @	.35
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for an increase in rates, after installation of common battery service and modern appliances in the exchanges. A list of subscribers shows that they favor the improvements contemplated and are willing to pay an increased rate for better service. Rural rates are not affected. The application asks for an increase in 150 business telephones from $2.50 per month to $3.50 and on 531 residence telephones from $1.25 per month to $1.75.

April 30: The Sweet Springs Telephone Co., of Sweet Springs, Saline county, filed an application asking, contingent upon installation of modern facilities, an increase in rates of business telephones from the present rate of $1.50 per month to $3 and an increase on residence telephones from $1 per month to $1.50.

May 1: Application filed by the Lafayette County Telephone Co. for authority to buy the property of the Jackson County Telephone Co. for $25,500.

May 1: Application dismissed in the matter of the application of the Middle States Utilities Co. of Missouri for permission to construct and maintain a metallic telephone toll line between its exchanges at Memphis, Scotland county, and Baring, Knox county, and between Memphis, Scotland county, and Milton, Van Buren county, Iowa.

May 3: Order of suspension of rates of the Exeter Telephone Co., Exeter, issued by the commission on February 24, 1928, cancelled and the P. S. C. Mo. No. 3, of the Exeter company approved and the rates therein given allowed to be put in force on June 1, 1928.

May 3: Application filed for approval of the purchase by the Commonwealth Telephone Co., a Chicago holding company, of the Missouri River Telephone Co., with exchanges at Missouri City, Orrick, Hardin, Elmira, Rayville and Henrietta for $115,000.

May 4: Application granted of the Scotia Telephone Co. to purchase certain telephone lines and equipment owned by P. K. Higgins, for the sum of $4,000 and for a certificate of convenience and necessity for the Scotia company to operate the property.

NEW YORK.

May 10: Hearing at Albany concerning the lawfulness of proposed withdrawal of night rates between May 25 and September 10, of each year applying to calls from certain summer resorts and exchanges in greater New York.

OHIO.

April 20: Ohio Associated Telephone Co. filed application for approval of the purchase of the property of the S. W. Martin Telephone Co. of Harpster.

May 3: Cincinnati & Suburban Bell Telephone Co. authorized to sell at par, 35,542 shares of common stock for the purpose of financing extensions and betterments.

May 3: Ohio Central Telephone Corp. filed revised schedule of rates, covering service in Mt. Gilead, Caledonia, New Winchester, Sparta, Chesterville, Iberia, Johnsonville, Cardington, Marengo, Beach City and Martel.

OKLAHOMA.

May 1: Application granted of the Southwestern Bell Telephone Co. to increase its rates at Idabel; 188 subscribers filed an agreement, stating that the increased rates were satisfactory.

May 8: Hearing on application of Oklahoma-Arkansas Telephone Co., of Poteau, for order fixing compensation for rendition of toll service in connection with Southwestern Bell Telephone Co.

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